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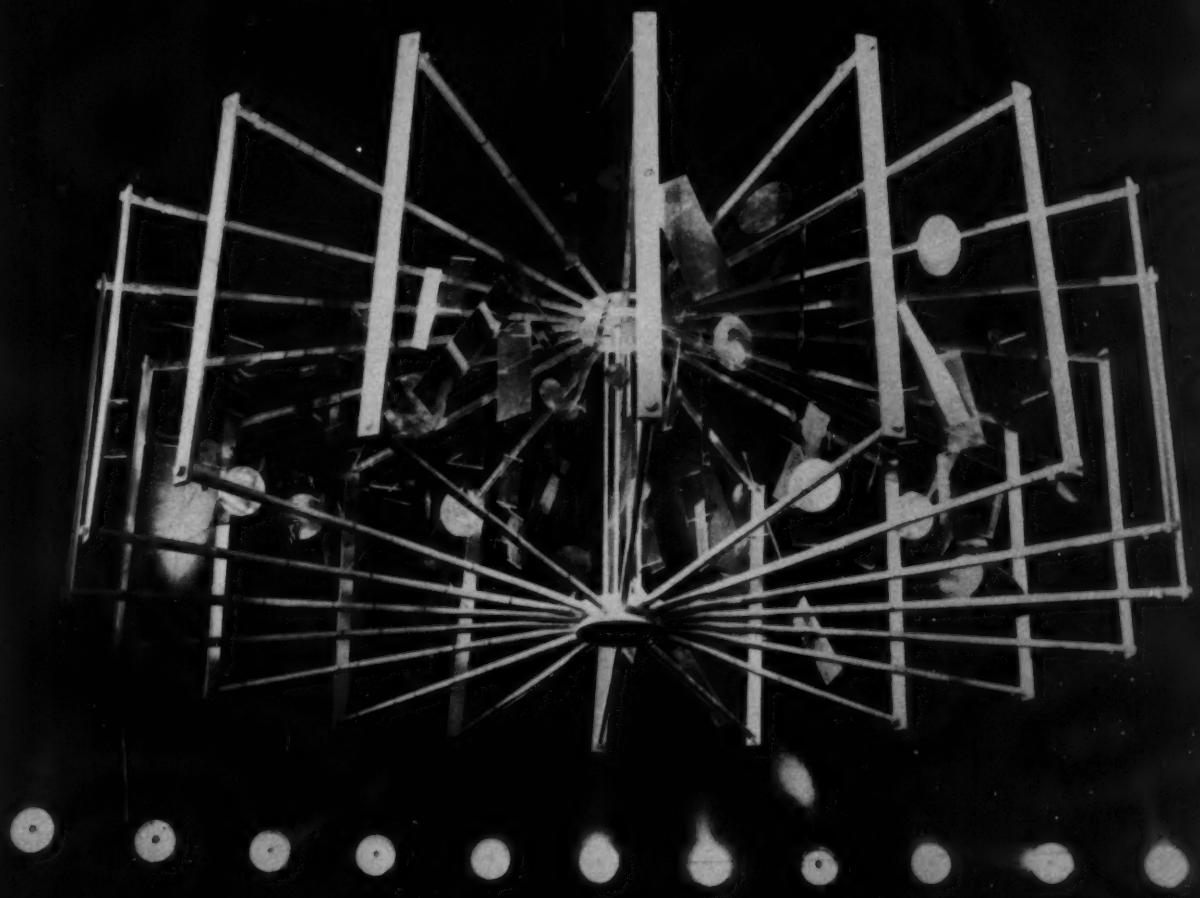
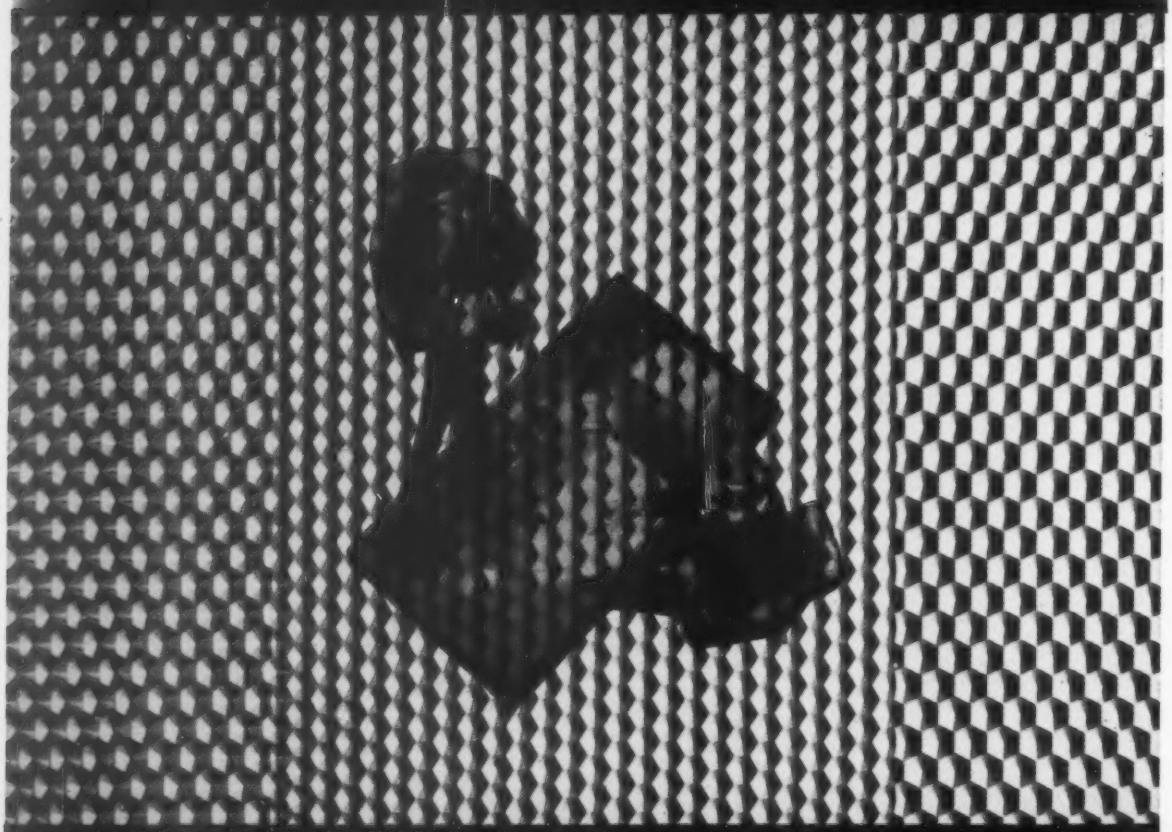
Light and Lighting

June 1961



IF FLUORESCENT TUBES COULD ONLY SEE . . .



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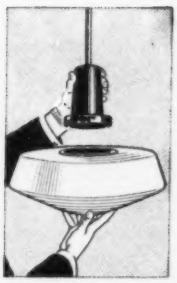

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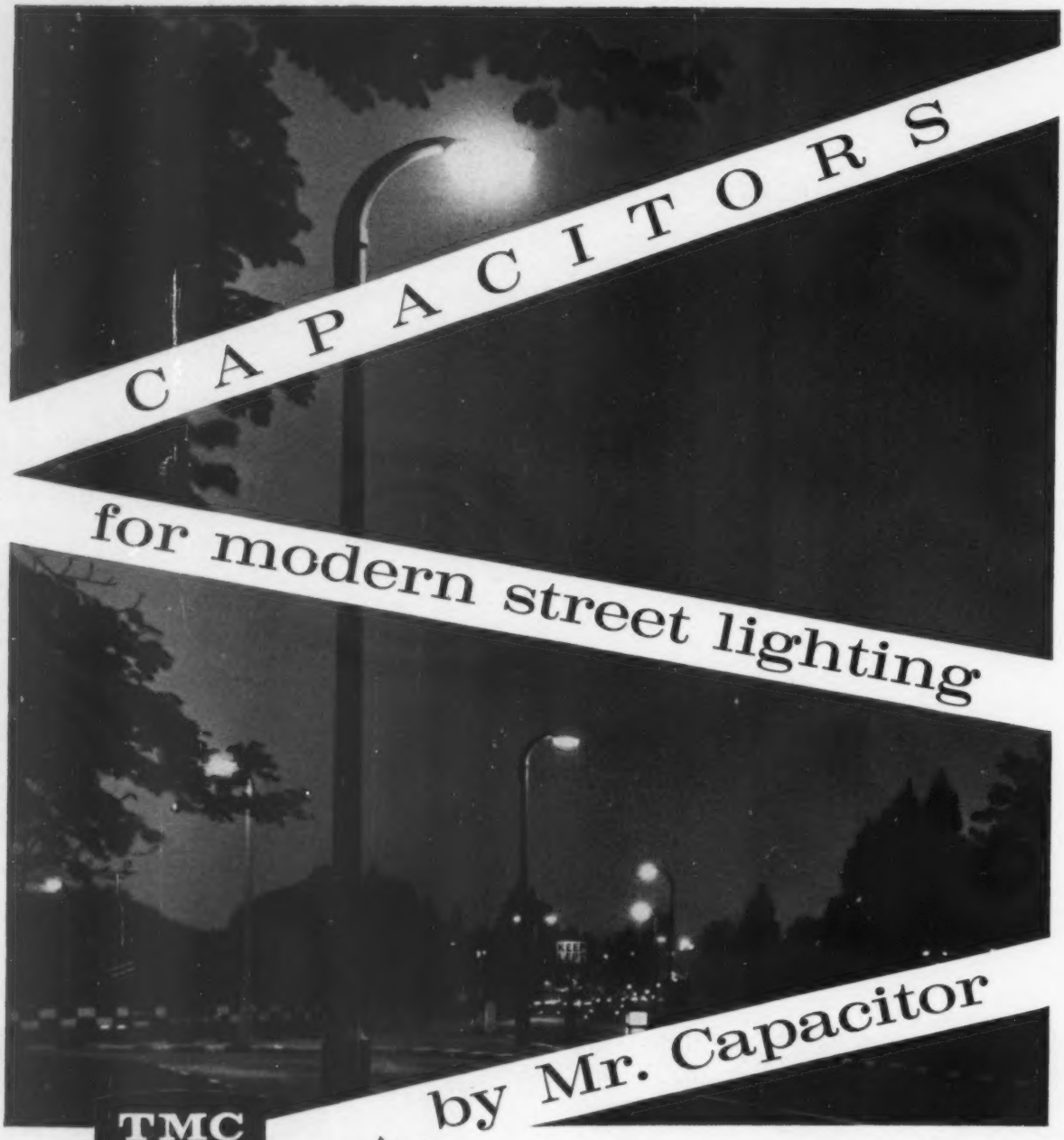

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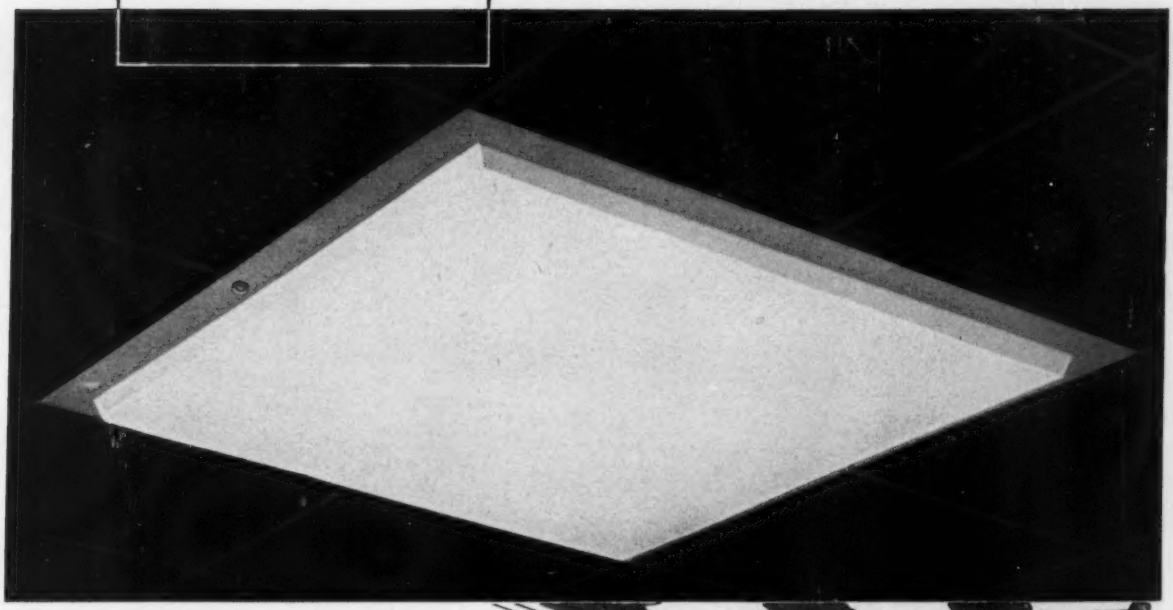

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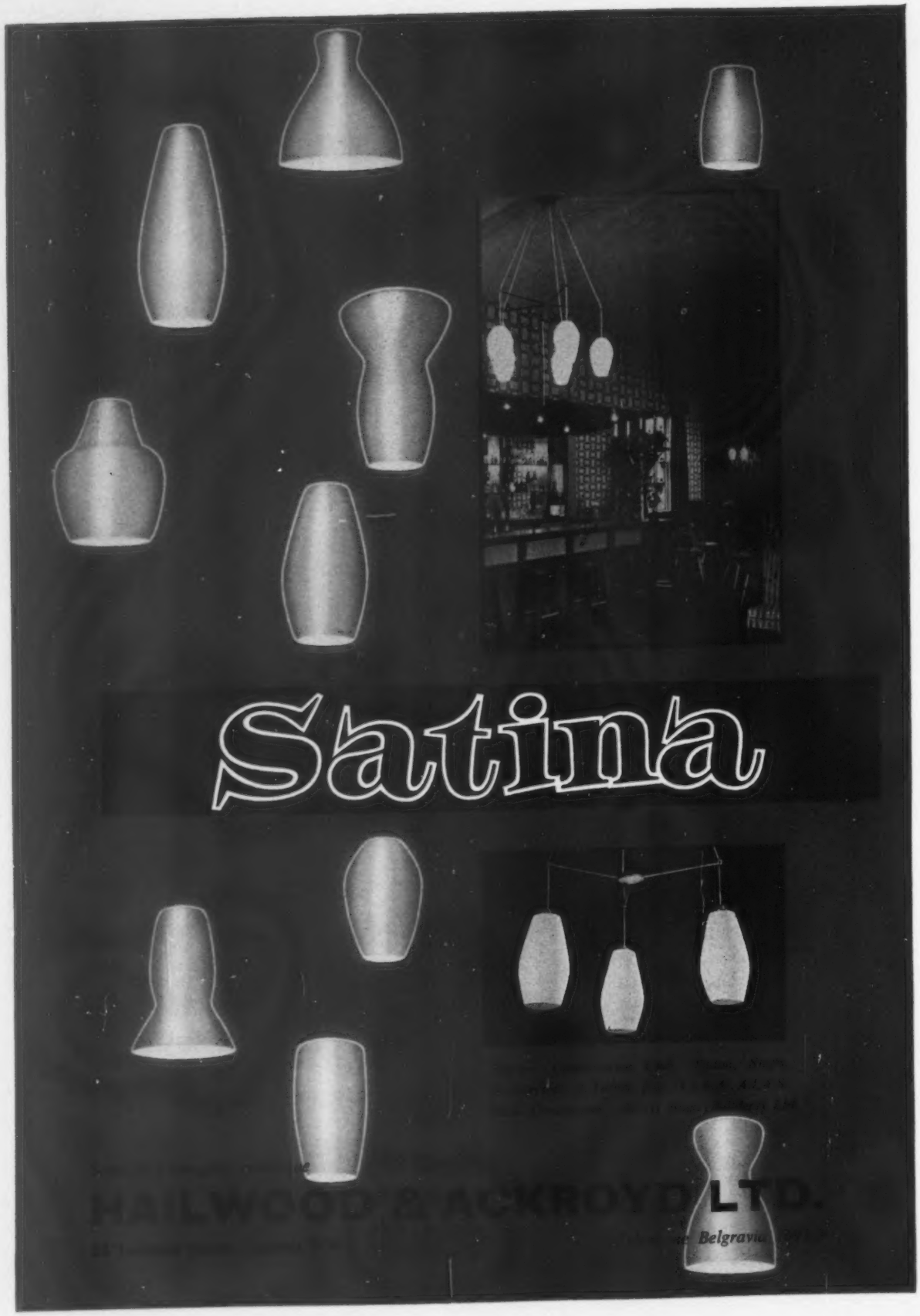
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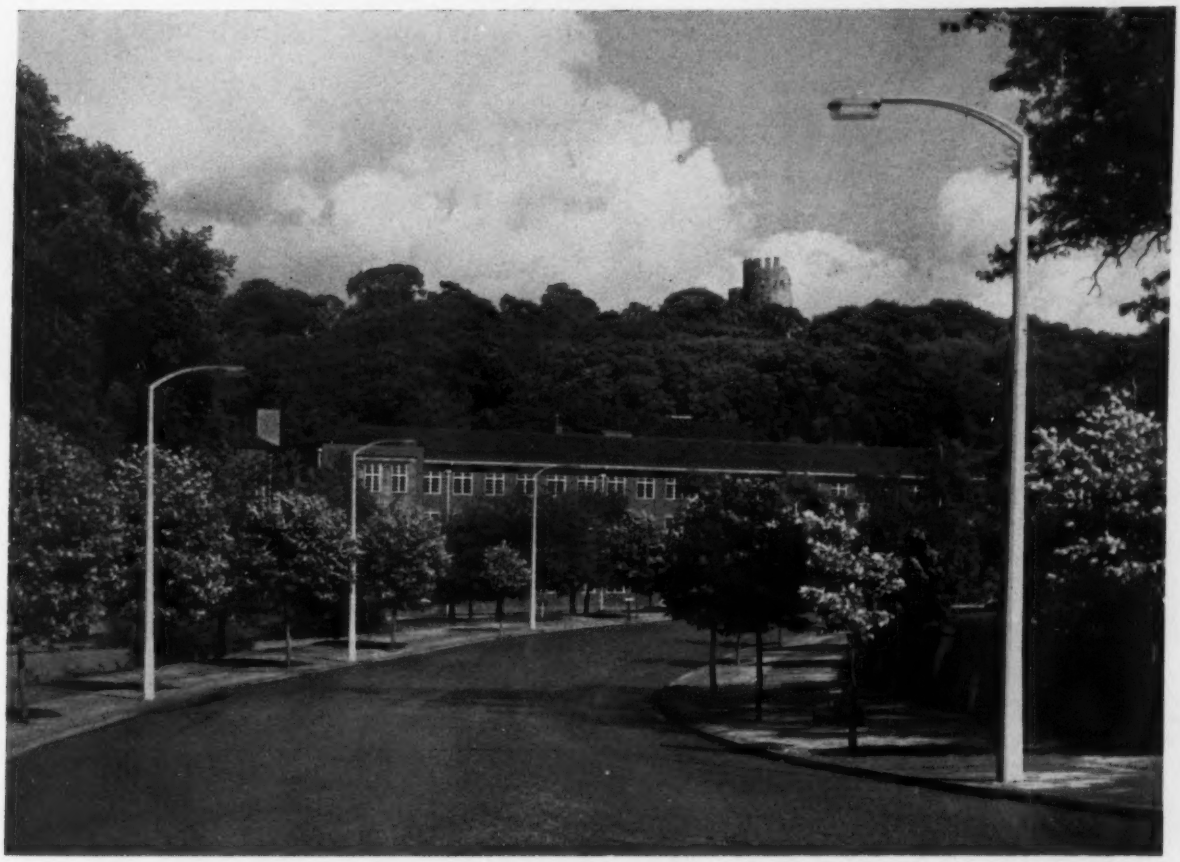
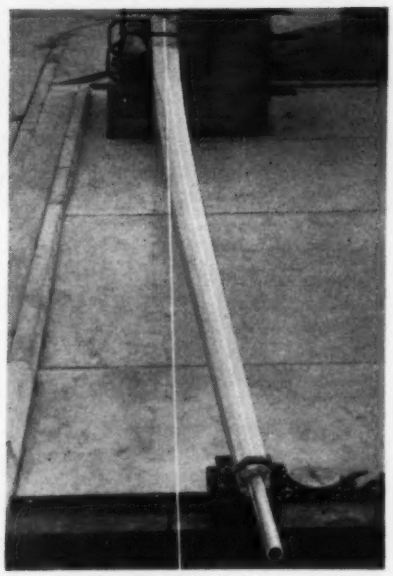


Photograph of one of many Stanton designs acceptable to the Ministry of Transport for use on trunk roads and approved by The Council of Industrial Design.



STANTON

Prestressed Spun Concrete Lighting Columns

Stanton Type 8F Spun Concrete Lighting Columns at Dudley, fitted with Revo C.15342 lanterns.

Photograph by courtesy of D. S. Warren, A.M.I.C.E., A.M.I.Mun.E., Engineer and Surveyor, Dudley.

Spun concrete column under a load of 1,092 lb. showing a deflection of 13½ inches. (The British Standard 1308:1957 proof test load is 320 lb.)

The Stanton Ironworks Company Limited Near Nottingham

Canteen of Messrs. John Thompson (Wolverhampton) Ltd.

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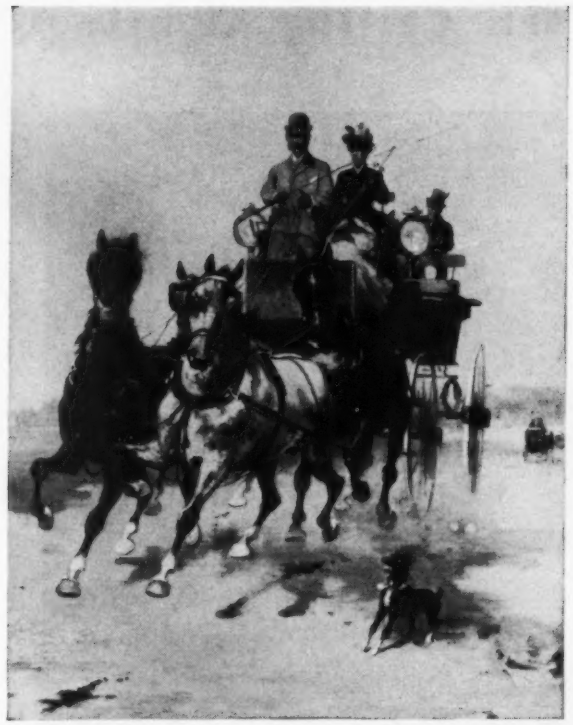

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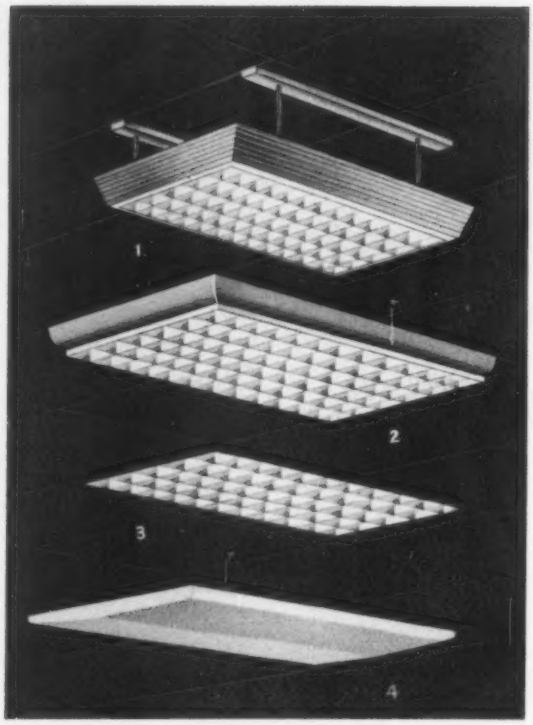

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Lighting installation in St. Margarets Road, Twickenham. Photographs by kind permission of Alfred S. Knolles Esq., B.Sc., M. Inst. C.E., M. Inst. Mun. E., Chartered Civil Engineer, Borough Engineer & Surveyor of the Borough of Twickenham.

Modern street lighting equipment must do two things: it must provide illumination of an extremely high standard; it must also blend naturally with its surroundings. The equipment shown here does both jobs supremely well. The Elecoslim columns and Eleco Silver Ray Lanterns are an excellent combination of technical efficiency and tasteful design; the superb lighting provided by the Philips MBF/U 400 watt lamps ensures maximum safety. The result is a highly successful street lighting scheme—just one of the many carried out jointly by Eleco and Philips.

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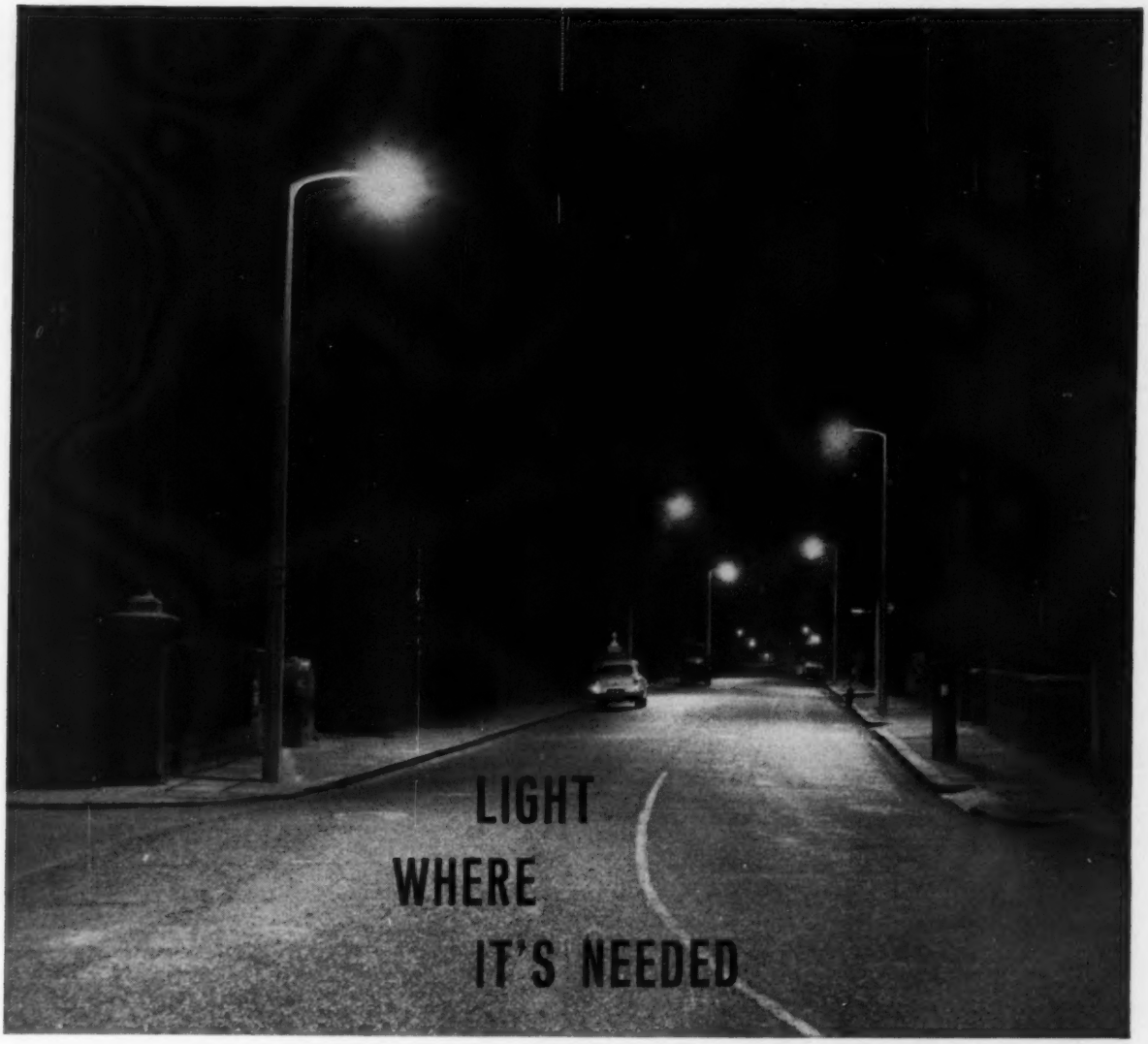

The excellent illumination given by these Philips MBF/U 400 watt lamps means maximum safety for all road users. It ensures excellent visibility . . . reduces the risk of accident. And, as with so many other successful street lighting installations throughout the country, the Philips lamps are housed in Eleco Silver Ray Lanterns mounted on Elecoslim columns. The two famous names of Eleco and Philips are your guarantee of street lighting that's completely efficient, completely dependable. And their long, successful experience is available to you at any time.

Lighting installation in St. Margarets Road, Twickenham. Photographs by kind permission of Alfred S. Knolles Esq., B.Sc., M. Inst. C.E., M. Inst. Mun. E., Chartered Civil Engineer, Borough Engineer & Surveyor of the Borough of Twickenham.

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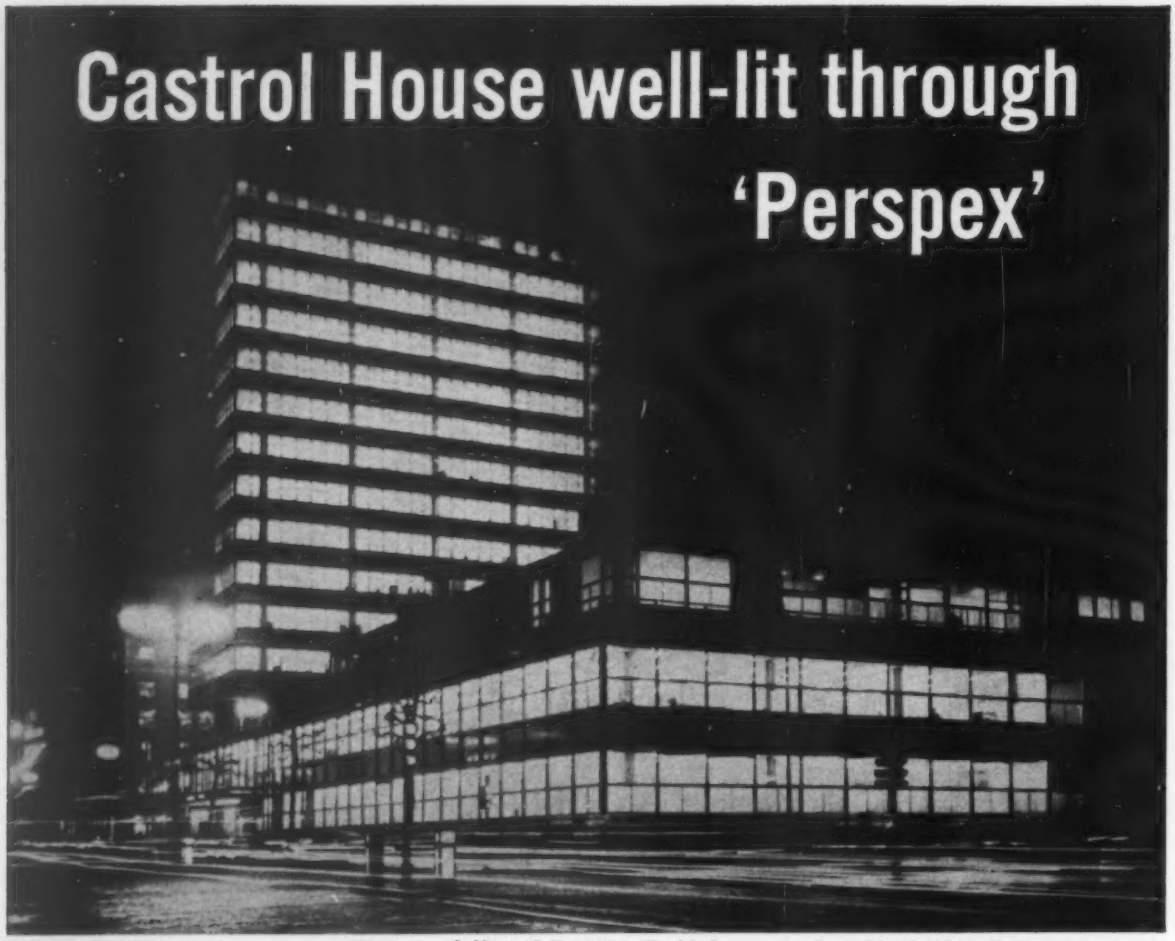
Castrol House well-lit through 'Perspex'



Architects : Gollins, Melvin, Ward & Partners Con. Engs. : Edward A. Pearce & Partners

Exterior of Castrol House built for Castrol Limited, Marylebone Road, N.W.1, showing the very large installations of cold cathode fluorescent lighting fittings made by Ionlite Limited, Scrubs Lane, London, N.W.10. The continuous trough fittings all have diffusers made from diamond pattern 'Perspex' acrylic sheet.

The Vista Lounge on the top floor of Castrol House showing small ceiling lighting fittings moulded from 'Perspex' acrylic sheet by Frederick Thomas & Co., Stanhope St., London, N.W.1.

The DAEMPA ceilings throughout Castrol House are fitted with continuous trough cold cathode lighting with diffusers made from diamond pattern 'Perspex' acrylic sheet by Ionlite Limited, Scrubs Lane, London, N.W.10.

IONLITE LIMITED chose 'Perspex' acrylic sheet for the diffusers on the cold cathode lighting fittings recently installed in the 'Daempa' aluminium suspended ceilings in Castrol House. The covers are shaped from patterned 'Perspex' acrylic sheet, to diffuse the light and to secure a smooth integrated appearance throughout the installation. By using 'Perspex', Ionlite Limited were able to select, from the wide range of colours and finishes now available, the material best suited to the different types of fitting necessary in this installation. The use of 'Perspex' made it possible to produce these specially designed covers economically without high tool costs.

For the specially designed ceiling fittings made by Frederick Thomas & Co. for the Vista Lounge, 'Perspex' was specified for the diffusers.

The advantages of 'Perspex' illustrated in this very large installation are equally applicable to your own lighting problems.

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'Perspex' is the registered trade mark for the acrylic sheet manufactured by I.C.I.

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FP.75

Light and Lighting

Vol. 54 No. 4

Editor: G. F. COLE

Assistant Editor: D. B. WILLSON

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Money and Manpower

The question posed by one of our contributors in this issue on the desirable frequency of the Electrical Engineers Exhibition raises a much wider problem of the total of exhibitions, conferences and organisations which the lighting industry is obliged, or expected, to support. Taking organisations first there are the APLE, BLC, ELFA, ELIC, IES and NIC, all of which are concerned solely with lighting matters; add the IEE and ECA, with which many people in the industry are associated, the BSI and the international organisations CIE, IEC, ISO and CEE and the list becomes formidable. Then count, if possible, the number of committees of all these bodies on which lighting men serve and the demands upon their time, energy and output become alarming. Fortunately, there are only two major annual exhibitions, those of the APLE and ASEE; the main questions here are whether the business resulting from them justifies their cost and whether there is sufficient development during a twelve-month period to justify annual events. On the conference side, we have the annual events of the APLE, ECA and BEPC and the biennial summer meeting of the IES. Now all these things add up to a great deal of time, work and effort and, without wishing to detract in any way from the value of the work done by any of the organisations we have mentioned, or from the usefulness of the exhibitions or conferences, it would seem that the time is ripe to consider the money and manpower available within the industry and to attempt some rationalisation and co-ordination in its expenditure. All these things are run by or depend upon the same few men; why, therefore, is it necessary for the industry to dissipate its strength in so many directions? Fortunately they have at least one thing in common—a very good lighting journal.

Notes and News

THE TEACHING PROFESSION has been much in the news recently—one can hardly pick up a newspaper without reading about the steps being taken by certain sections to improve their professional status. We are indebted, however, to Mr Lowson writing in the Australian *IES Lighting Review* for an apt comparison between the teaching and lighting professions. He points out that the advancement of the professional status of IES members (he is referring to the Australian IES but his comments apply equally well to our own Society) is a legitimate and important aim of the society. There are doubts, however, about the best means of going about this and he quotes the following letter published by the *New Statesman* on the teaching profession which, he points out, has some very pertinent things to say about the achievement of professional status by members of organisations in general. The letter reads:

SIR: In this correspondence there are . . . many questions going begging. Take . . . the assumption that teaching is a 'profession' in any way comparable with that of the law and medicine.

'Surely,' pleads Mr Jarvis, head of publicity for the NUT 'the chief difference between teachers and doctors and lawyers is precisely that the latter are members of a united body able to speak with one voice and imposing a code observed by every member of the profession, and teachers are not.'

This is just not true, the chief difference being between the standards of professional training and competence.

Most of the 256,000 teachers employed in maintained schools have done a two-year course at a training college, admission to which can be gained with five passes at 'O' level in the GCE. Nearly 30,000 merely did a nine-month course under the Emergency Training Scheme, with an even lower admission qualification, and there are more than 36,000 with no teacher training of any kind. In other words, one in four teachers has trained either for less than a year, or not at all. As for academic standards, less than one in five has either a degree or its equivalent.

Even nurses, tool-makers, and wood-machinists train for five years or more. But would, at a higher level, the RIBA register a man as an architect who had merely done two years at a local school of building? Would the Law Society recognise as competent a solicitor who had completed a nine-month course? And would the BMA allow 36,000 completely untrained men and women to impose on the public as 'doctors'?

And yet, by continually using the word 'profession', teachers are attempting the old dodge of reform by nomenclature, being convinced that if only they can get their occupation called a 'profession' they will automatically win 'professional status', with all the prestige (not to mention 'professional remuneration') that goes with it. But such status has to be achieved by recognition of professional standards and conduct, not by ritual incantation of the magic word, and setting up 'an all-embracing professional organisation'.

Let them first earn such recognition. In the meantime it remains true that if they go on making enough noise about it they will convince other people of their real status as they have already convinced themselves, but, in doing this, they will only succeed in classing themselves with professional footballers and snooker-players.

G. W. TARGET

Mr Lowson's comments following this letter need no additions by us and we repeat them in full: 'We feel that Mr Target's remarks deserve careful study by all Australian lighting engineers who have the professional advancement of their Society at heart. He makes it extremely clear that professional standing is something that must be earned and cannot be simply created by passing a suitable resolution in committee. Adequate professional education is the key. If the 'lighting' engineer wishes to achieve the same respect enjoyed by the registered architect or chartered engineer he must be prepared to submit to an equally extensive and profound education before trying to claim 'professional' status. The sooner this idea is accepted and acted upon the quicker will the desired result be attained. Any watering down of the requirements needed before a man can put letters after his name will only delay professional recognition and lower the status eventually achieved.'

Design Awards

ASK ANYONE IN THE lighting business to give you the names of some designers and most people will probably give you the same two names. (They might also give you a third who is the designer of their own particular products—but there can be no guarantee of this.) And these same two names crop up with almost monotonous regularity when the Design Awards of the COID are announced each year; the names are, of course, Richard Stevens and John and Sylvia Reid who are such a successful partnership that they must be considered as one name.

And once again John and Sylvia Reid collect the award for lighting fittings this year, this time for their spot-light fittings made by Rotaflex. This range is designed to take any size of lamp

up to and including 150w on a universal, swivelling bracket which is common to the ceiling, floor and wall mounted versions. The sliding action of the body allows for a variety of lamp positions and the locking device also maintains the housing at any angle; the supporting brackets swivels through a complete circle and locks by finger pressure in any position. Natural anodised aluminium is used for the lamp housing and other metal parts are finished in matt black. The floor standard has a base plate finished in white vitreous enamel and incorporates a foot-operated switch. The range was chosen by the judges for the extreme simplicity of design, and the sensitive use of materials and finishes were praised by the judges who noted how the silvering of the spotlight matched the anodised finish of the lamp housing to create a unity between the two. Congratulations to John and Sylvia Reid for this further success—and may we add that in using the phrase 'monotonous regularity', we only wished to say that it is a pity the lighting industry cannot produce more designers of this calibre.

Spotlight fittings designed by John and Sylvia Reid which received a Design Award of 1961.

Commons on Common Prices

COMPLAINT THAT TENDERS FOR LAMPS received by the Stoke-on-Trent Council were often identical in price was made in the House of Commons recently and it was suggested that in view of 'this further evidence of monopoly practice', the President of the Board of Trade should refer the matter to the Monopolies Commission. The Parliamentary Secretary to the Board of Trade replied that from the information supplied he did not consider that there was either an agreement or monopoly on electric lamps; tenders had been identical in some cases, but not in all.

Vehicle lights continue to occupy the attention of the house. In one instance, the Transport Minister, Mr E. Marples, reported that a variety of views and suggestions had been received on draft regulations for additional side lights on long vehicles. These were being studied and a decision was expected shortly. Proposals for controls on projecting loads, including the fitting of lighted marker boards, had also been discussed. In another instance, questions were raised on the power to make the use of dipped headlights compulsory on a moving vehicle after lighting-up time, which had been included in the Government's Road Traffic Bill. Mr Marples said that, if and when the Bill was approved, the precise use of this power would need more study. It was pointed out that at least two coroners had criticised the use of no more than sidelights in fatal accident cases. Mr Marples replied that at the moment there was no statutory requirement that vehicles should be fitted even with headlights; the Government was proposing to ask for power to deal with this in the Bill and as soon as it was obtained, the Government would act upon it.

APLE Conference Programme

DETAILS HAVE JUST BEEN ANNOUNCED of the programme for this year's conference of the Association of Public Lighting Engineers, to be held at Scarborough, October 3–6. The first morning is given over to the usual opening ceremony, induction of the new President, Mr E. C. Lennox, and his Address. The afternoon is devoted to a paper: New lamps—or old, by H. Hewitt, and the evening to the civic reception. Wednesday sees a repetition of last year's innovation, the open forum, which follows the annual lunch. The remaining papers to be given on Thursday and Friday are: Some social and economic aspects of street lighting, by E. B. Sawyer; Colour is no bar, by J. T. Grundy and G. K. Lambert; Local authorities and street-lighting—overall considerations, by D. Clark. There is also the presidential reception on Thursday evening. The conference is to take place in the Spa, which will also house the exhibition of street lighting equipment; the outdoor display will be staged on the Spa Approach. Since this year's conference is being held a few weeks later that usual, readers might like to note that our review will be given in the December issue.

Conference Roundabout

RECENT WEEKS HAVE SEEN a spate of lighting conferences: there have been two regional IES meetings at Malvern and Peebles, both highly successful; at the same time, AIDI (the Italian IES) received enthusiastic international support for its first national meeting, in Turin, followed by an equally popular AFE meeting in Rouen. More detailed reports will be given in our next issue.

Kitchen in an individually built house at Camberley, which is largely of timber construction. The two opal glass cylinder fittings form part of a 'general' lighting installation; work surfaces are catered for by the under-cupboard units. The far wall is designed to be extended outwards if necessary to add two extra bays.

The following article surveys a number of houses and flats which have been visited recently and shows, generally, that the lighting and electrical installations of modern speculative building still falls short of what can be regarded as adequate; the installation in an individually built house is described as a comparison. Illustrations of these houses are shown with examples of more satisfactory designs exhibited recently in this country and with some American ideas. The feature concludes with illustrations of domestic fittings which have been introduced recently.

DOMESTIC LIGHTING SURVEY

THE GENERAL RISE IN THE STANDARDS OF LIGHTING for places of work and entertainment has led to a greater awareness in the general public of the value of good lighting. The most noticeable effect of this has been in domestic lighting fittings; many good quality, well designed fittings are now available and have enjoyed a sustained demand from the public. It is pertinent to ask, however, whether there has been any comparable change in domestic building practice, which in the past has been generally deficient in its provision for good lighting. To try to answer this question we have recently been privileged to visit a number of new houses and flats in and around London.

These premises comprise a privately designed and built house in Camberley, a 'luxury' flat in Kensington, houses and flats in a new estate development in Dulwich and 'luxury' houses in Dulwich. All but the Camberley house can be regarded as speculative, in the sense that they were built to general requirements and offered for sale, whilst the Camberley house was individually designed and built for a specific owner.

Individually designed house

The special feature of this house at Camberley is the large scale use of Canadian timber in its structure and finishes. This material was chosen both for its ease of construction and for the facilities it can offer in making future extensions to cater for changing family needs. Designed for a senior executive and his family, the house was required to be flexible in use; to provide maximum availability of space for entertaining, the ground floor areas are largely open in plan. There are, in fact, two ground floor levels, resulting from the contours of the site. Living/dining accommodation, and the kitchen, are placed at the upper level, with the remaining living accommodation a half-storey below and the bedrooms a half-storey above. The lower living area is continuous with the entrance hall, which is separated from the front entrance by a draught lobby. On the far side of the hall is sited a garage, store-room and bathroom, later to be converted into a master bedroom suite. The upstairs accommodation comprises bathroom and four rooms designed as study bedrooms and for privacy they are partly insulated from the rest of the house by a closed corridor, to which there is separate external access. A partition between two of the bedrooms may be removed as the family grows up. Further changes can be provided for by extending the end of the living/dining area to accommodate two further bays, increasing the overall area of the house from 2,000 ft² to 2,500 ft².

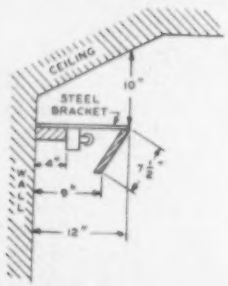
Since this is an individually designed house, the lighting and electrical installation has been planned on an individual scale, to meet the needs of the occupants. There are 112 outlets throughout the house, combining socket-outlets and lighting points. Lighting is wholly direct and for most rooms is by a simple opal glass cylinder, supplied by Plus Lighting Ltd. These have been provided generously throughout the house to form the 'general' lighting installation; single bedrooms are provided with two; double bedrooms four, living/dining room four, kitchen three. This basic installation is then supplemented by local lighting largely from table fittings with 'Fenella' shades, the frequent siting of 13A ring-circuit socket-outlets facilitating their use where required. The lower ground floor living area employs GEC, ceiling mounted, open-base, opal glass bowls, whilst the kitchen lighting is supplemented by inverted 'button-mushroom' enclosed opal glass bowls mounted on the underside of high level cupboards, to give additional lighting over the sink and cooker hob. There is excellent fenestration, particularly in the ground floor area, where the infilling panels in the post and beam framework are wholly glass.

In contrast to the generous lighting of the Camberley house, the other dwellings have in general what can fairly be called minimal lighting installations, which show relatively little improvement over what would have been found in comparable buildings constructed before the war. This conclusion applies to both middle-income-group dwellings and luxury dwellings and must be assumed an inevitable result of building to a price.

Middle-income-group dwellings

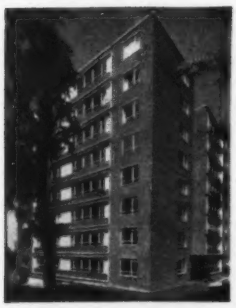
The two types of middle-income-group dwellings—houses and flats at Dulwich—form part of a redevelopment of the Dulwich College Estate being undertaken by Wates Built Homes Ltd. There are eight blocks of multi-storey flats and 128 houses, mostly terraced, of two or three storeys. In the blocks, there are four flats on each floor, served by a central lift, stairway and services core; each flat comprises living/dining room, two bedrooms, kitchen and bathroom. Priced at between £4,230 and £4,825, leasehold, the flats offer a number of amenities—central heating, combined electric fire and bookcase unit for the lounge, fitted kitchen complete

Continued on page 170



Above, valance, or pelmet, lighting in an American home, supplemented by recessed filament lamp fittings in the ceiling. The simple construction of the valance is depicted left. Below, the £15,000 'luxury' house at Dulwich; the interior is of the dining room as seen from the living room, with a view beyond of the hall. This was the view house, decorated and furnished by Alan Wheeler of Dunns of Bromley. A simple pleated shade is used over the dining table; the floor standard employs a vertical fluorescent lamp.

DOMESTIC LIGHTING
continued



Above left, a glimpse into the dining room of Unity House, at the Ideal Home Exhibition, which was lighted throughout by the GEC. Above right, another American picture, illustrating the use of lighting for decorative accent; the indoor garden (used as a room divider) is highlighted by two 75w reflector lamps concealed in the deep wood box above. The cornice provides additional background lighting for the recessed downlight over the table. Below, middle-income-group dwellings at Dulwich. Left shows the 21 ft. lounge of the flats, seen through the wired glass inner wall, and showing the dining end; right, the living/dining area of one of the terraced houses. The inadequacy of the lighting installation is demonstrated by the need to loop the flex of the far pendant.

DOMESTIC LIGHTING SURVEY continued

with double-bowl sink and built-in refrigerator and modern coloured bathroom suite. It is to be regretted, therefore, that the lighting and electrical installation does not follow the same high standard. All rooms except the kitchen are provided with no more than one ceiling point for lighting; in the lounge, a room 21 ft 9 in. by 13 ft 3 in., this is sited centrally although the occupation of this room is likely to be concentrated at either end. The lighting point is supplemented by three sock-outlets: one in each end wall and the other about one-third along the inside long wall, at the dining end. The fenestration of the lounge is good, since the outer long wall is glazed for most of its length, whilst two-thirds of the inner long wall is of Georgian wired glass, giving light into the corridor and entrance hall and creating an illusion of greater spaciousness. On the other hand, the complete absence of socket-outlets in the 21 ft long outer wall means that the occupants' provision of local lighting is limited to either end unless they are prepared to tolerate unduly long flexible leads. One flat visited, however, was provided with lighting points in the end walls as an extra. The bedroom ceiling points are sited near the windows and this, coupled with the provision of only two socket-outlets, imposes considerable restriction on room layout, if full use of the sockets and lighting point is to be obtained at all times. The kitchen has two ceiling outlets fitted with batten lampholders, which does at least give some alleviation of the likelihood of occupants working in their own shadow although there is some screening when the doors of the high-level cupboards are opened.

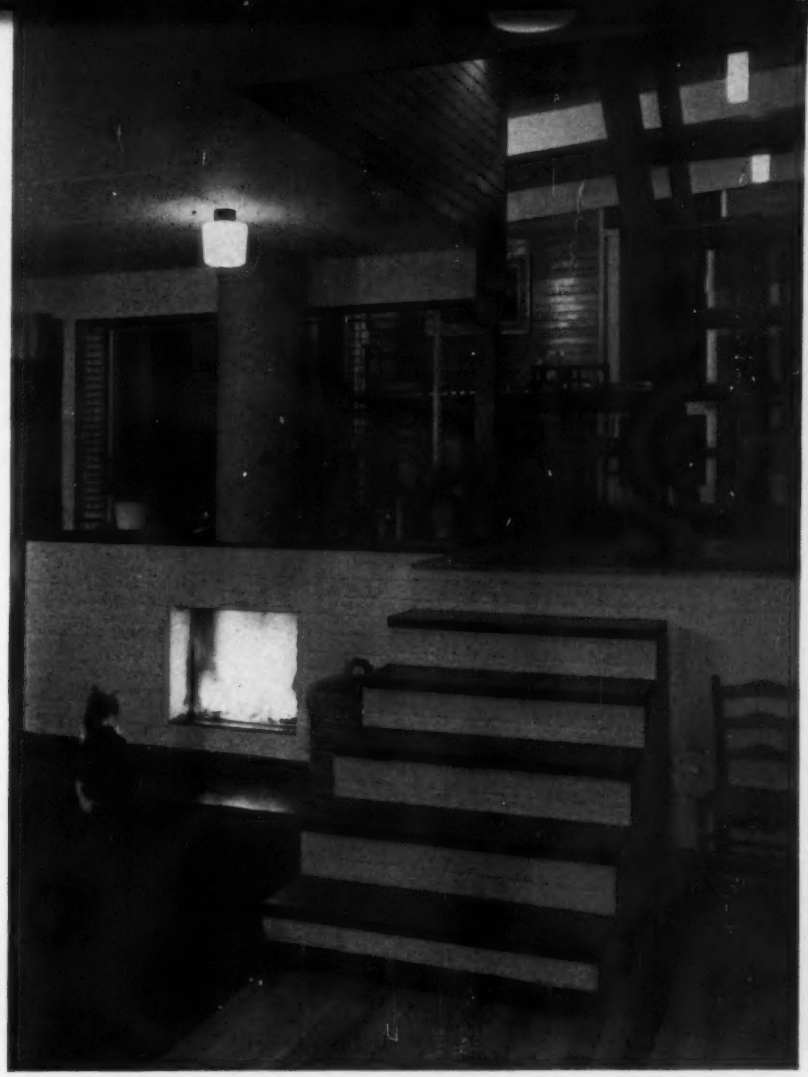
The houses, which form part of the same development, and are priced at between £5,500 and £5,950, exhibit broadly similar characteristics. There is a large ground floor room, 18 ft by 20 ft, divided more definitely into two occupation areas by a beam. A ceiling outlet is provided in the centre of each area but again, the provision of only three socket-outlets in a room of this size places limitations on the use of supplementary lighting. The kitchen is less well equipped, from a lighting aspect, than in the flats, having only one ceiling point, whilst the bedrooms have more or less the same provision. In the three-storey houses (in which the second floor bedroom occupies the roof space and has a window at each end) a useful feature is the provision of a recessed lighting fitting in the ceiling over the stairs.

Luxury houses and flats

The luxury houses at Dulwich are also being built by Wates; there are four types, ranging in price from £15,000 to £20,000 and in area from 2,390 ft² to 3,110 ft². There is extensive use of wood in the interior finishes, coupled with a considerable range of built-in furnishing. Of two houses visited, one (at £15,000) had been fitted out as a show house. From the entrance hall, access is gained on one side to the garage with laundry area in the rear and on the other side to the dining

Continued on page 175

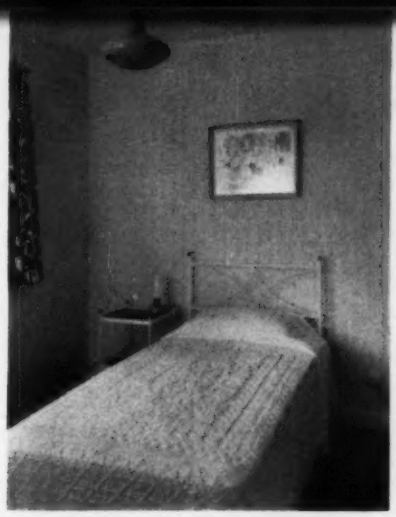
Top two pictures show phases in the 'Growing House' display at the Furniture Exhibition, designed by Gordon and Ursula Bowyer, A/ARIBA, in consultation with the Design Research Unit; stage 2 (upper picture) employed a pendant spherical shade, wall bracket, inverted metal cone reading lamp, plastic shade table lamp and a spot lamp to illuminate a fish tank; stage 4 (second picture) had a much more sophisticated design, including wall panelling with lighted recesses apart from more expensive fittings. Bottom picture is of the interior of one of the luxury flats at Kensington, decorated and furnished by Trollope and Sons in contemporary style.

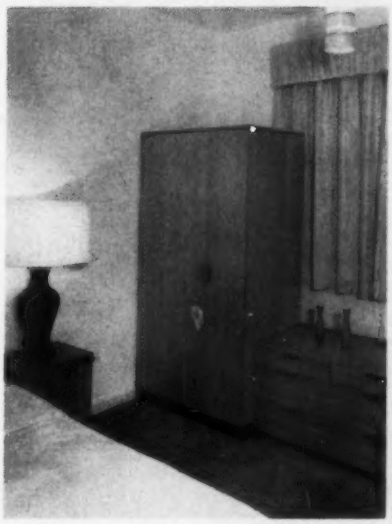


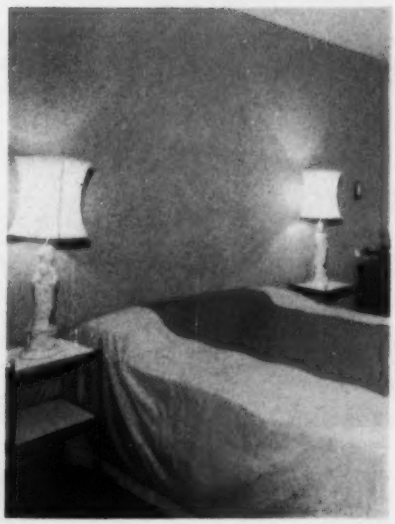
Above and right, the timber-framed house at Camberley. The interior shows the two levels of the ground floor living accommodation and the type of fittings used for the lower ground floor area. Below left, living room of the luxury flats in Sussex Square, where use is made of built-in cove lighting. Below right, an American example of cornice lighting to accentuate a book-case wall; the cornice board is tilted.

Above, and left, American examples of pelmet and other forms of concealed fluorescent lighting for bedrooms; the example on the left, whilst basically simple, is particularly effective. Below left, bedroom lighting in the Crouch house at the Ideal Home exhibition; the fittings are taken from the new 'Gala' range introduced by Philips and described in more detail on pages 176, 177.

DOMESTIC LIGHTING continued







1 | 3
2 | 4

1, 2, bedroom interiors in the luxury house at Dulwich: that on the left is a single bedroom, with decorative coloured glass bowl pendant and imitation oil lamp at the bedside; on the right is seen part of the master bedroom suite. 3, 4, The flats at Kensington; left, the contemporary style show flat and right, traditional style. Below, one of the double bedrooms of the Camberley house, showing the general lighting pendants and a pair of matching table lamps.

DOMESTIC LIGHTING continued

Right, an American view of kitchen lighting; note the high intensities achieved on the work surfaces as a result of using local fluorescent lamps on the undersides of the wall cupboards. Below, one of the COID kitchens at the Furniture Exhibition, also showing good use of local lighting.

1. The bathroom of the master suite at Dulwich using a decorative glass cylinder, although this is the only lighting. 2. Bathroom of a middle-income-group house, also at Dulwich. 3. Use of an opal glass fitting for mirror lighting in the Unity House at the Ideal Home Exhibition. 4. Contrast the foregoing with an American bathroom, where an open-top soffitt is used with fluorescent lamps to provide indirect general lighting and good downward diffused lighting for person using the mirror.

1	2
3	4

room, which gives directly on to the living room, a single-storey extension, at slightly lower level, to the main part of the house. The kitchen is reached from both dining room and hall. The upstairs accommodation comprises four bedrooms and two bathrooms, one forming part of a master suite.

From the lighting aspect, the house is not so luxurious. The dining room has no more than a single ceiling point, and one twin 13A socket-outlet; the hall has also a single ceiling point. The living room, 25 ft by 17 ft 9 in., has again but one central ceiling outlet, supplemented by three 13A socket-outlet positions and two 2A outlets specifically for lighting. The kitchen is provided with two ceiling points and three socket-outlets. The other house visited (£20,000) differed little in principle. Apart from lighting in the rooms, lighting points were provided in all cupboards, operated by door switches and in the roof space. The general specification for all these houses says that the electrical wiring system is comprehensive and provides plenty of socket-outlets, yet in a £15,000 luxury house one finds only about one-third the lighting and electrical points installed in the house at Camberley, which has cost the owner £6,000.

The same conclusion applies to the luxury flats at Kensington. These, built for Finborough Properties Ltd by John Laing and Son Ltd, range from two to four bedroom apartments, let at rents from £700 to £1,275 per annum, to which rates, service charges and garage rents are added. The living accommodation is identical irrespective of the size of flat; there is a lounge area 13 ft 6 in. by 16 ft continuous with a dining area 10 ft by 11 ft supplied with four socket-outlets and two ceiling points, one in the centre of each area. Bedrooms are generally provided with one or two socket-outlets and a single ceiling point. Another block of flats, in Sussex Square, London, built by Wates, but which we were not able to visit, provides the only example of built-in lighting encountered in this review. The living room in each flat is provided with a cove running the length of one wall lighted by fluorescent lamps.

General comments

Although the foregoing examples represent only a fraction of present day domestic building, it is a safe bet that, from the lighting viewpoint, they are unfortunately characteristic of most of it. Yet this country is not without sources of good ideas on lighting, as shown at the Furniture Exhibition this year. The four kitchens staged by the Council of Industrial Design were a distinct advance on the Council's previous attempts and indicated clearly that lighting is an integral part of a room's furnishing. Although only one kitchen featured the use of fluorescent lamps overhead for general lighting, all four showed them in use mounted to the underside of wall cupboards for lighting the work surfaces below and they were well placed and properly shielded. Irrespective of size or colouring, however, more or less the same amount of light was provided in each kitchen and for this reason, the smallest room was the brightest and looked the best, which serves to show that a little engineering design can work wonders in ensuring that the right amount of light is provided where it is wanted. After all, the central heating systems which now seem a part of every house are, one hopes, suitably designed according to the heating losses they have to supply; is it too much to ask that the lighting should receive the same attention? The houses at the Daily Mail Ideal Home exhibition were also served to illustrate that good lighting can be achieved provided the basic installation is adequate.

Some other simple inexpensive lighting ideas have been exploited by Mr R. Chappell, a lighting engineer with Harris and Sheldon (Electrical) Ltd, in the relighting of his home. For the kitchen, basic work lighting is provided from two 5-ft, 80w fluorescent lamps built into the ceiling by the simple expedient of cutting away the plasterboard between two adjacent joists, creating a recessed cavity to house the lamps; this 'box' is then enclosed on its lower side by panels of 'Paragrid' ½-in. mesh louver.

In his lounge, the aim has been to provide general lighting indirectly from pelmets, with a feature light to give a focal point and various local fittings to be used as occasion requires to create brightness patterns. The lounge is the front half of a ground floor through room, the rear half being used mainly for dining. The two areas are divided by short walls projecting from the sides with a beam over; the front window bay is also separated from the lounge by a beam, which has been used to conceal two 5-ft, 80w 'de luxe warm white' fluorescent tubes for lighting the curtains. The 'conventional' dining area has a five-light pendant in the centre of the room and a matching two-light wall bracket. Additional light is provided by two 4-ft fluorescent lamps concealed behind a curtain pelmet over the window, whilst a wood box enclosing a spot lamp has been mounted on the wall over the sideboard to give a similar effect to that of the bookcase spot. The foregoing illustrates, not so much this house-owner's distinctly individual approach to the lighting of a home but rather that 'built-in' lighting can be provided with no more than wood or plastics and lamps, and that much more can be added provided the basic installation provides means for connection.

Further examples of what can be done simply and cheaply are provided by the American IES publication 'Lighting—Keyed To Today's Homes', from which illustrations are included in this survey. Among other things, this booklet shows to what extent use may be made of lighted coves, cornices and pelmets, comprising in many cases no more than simple wood fascias concealing fluorescent lamps; one would have liked to have seen such features incorporated at least in the luxury dwellings we visited. The Dulwich houses had their full measure of architectural amenities—breakfast nook in the kitchens, elegant stone fireplaces, recessed raised dais, bookcase-lined wall to a study and recessed boudoir are some which come readily to mind—and these lend themselves particularly well to decorative lighting treatment, even if it is not thought possible to provide a built-in basic lighting installation. And nowhere, outside the Camberley house, was use made of the underside of kitchen cupboards to ensure that a good working illumination was provided on work surfaces. It seems that house designers are still governed by precepts which date from the turn of the century; one cannot escape the impression that they are wedded to the 'gas age' mentality with inviolable marriage vows. But even if they feel they cannot depart from the idea of central ceiling points for general room lighting, why is it not possible to provide a room with at least an adequate number of outlets to give the occupant scope to light it with local fittings whilst affording flexibility for rearrangement with redecoration?

The Camberley house was designed for Mr E. Paton by Kenneth Wood, ARIBA, AMISE; main contractors were Dalley and Sons Ltd. The houses and flats at Dulwich were designed by Austin Vernon and Partners, F/ARIBA, architects to the Dulwich College Governors; the flats at Sussex Square were designed by Trehearne and Norman Preston and Partners, in association with K. W. Bland, ARIBA.

The last few months have seen the introduction of a number of new domestic luminaires with novel features, of which the most significant, perhaps, is the use of the new Philips large-bulb decorative filament lamp. Philips themselves have also launched out into the domestic fittings market, with designs of unashamedly Continental flavour. Then, of course, there were the Atlas domestic fluorescent fittings, which are included here for completeness.

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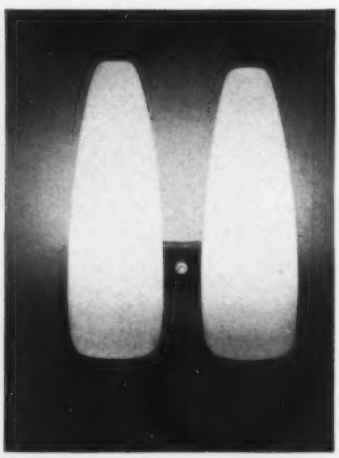
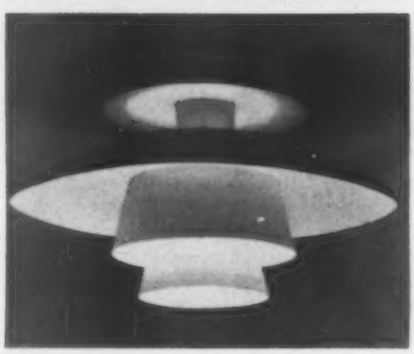
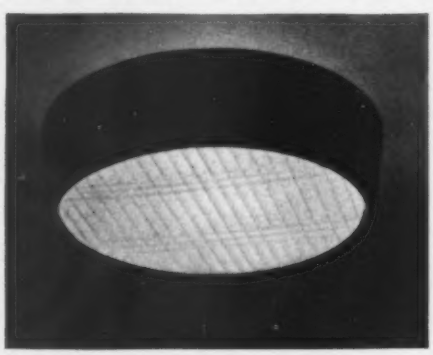
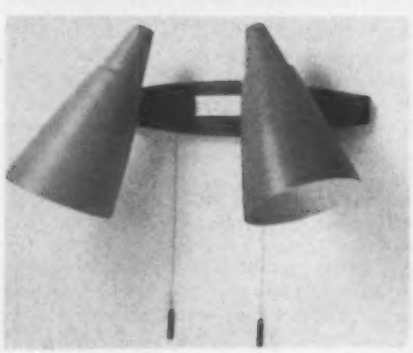
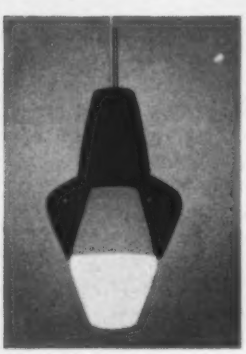
4	5	6
7	8	9	10

DOMESTIC LIGHTING SURVEY : LUMINAIRES





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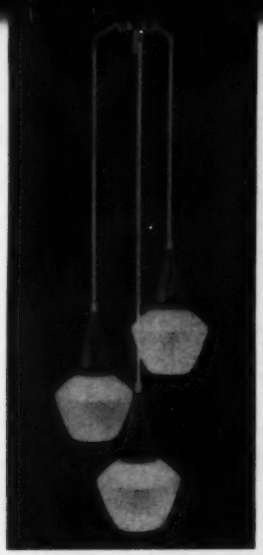
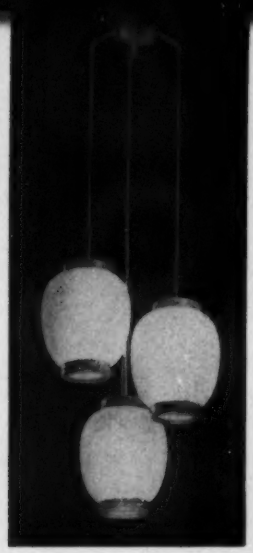
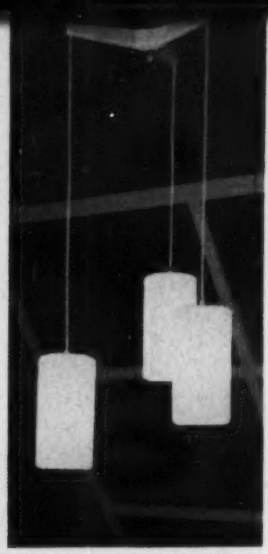
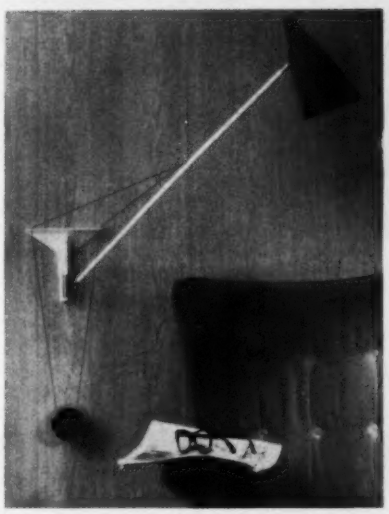
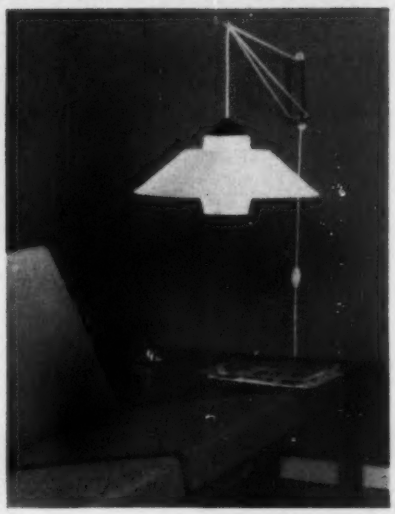




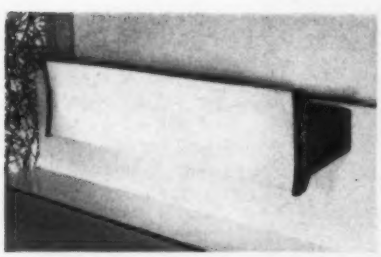


Facing page: 1, 2, 3, 6, four of the Philips 'Gala' range of fittings; 1, 3 and 6 are designed for use with internally-coated lamps, of 100w, 40w and 60w respectively whilst 2 makes use of a 100w bowl-mirrored lamp. 4, 5, two new designs by Harris and Sheldon; the first is a spun aluminium fitting for a 150w 'mush-room' lamp and also has a pendant partner; the second is made in two sizes for two or three 60w lamps and has a near relation in a square version. 7, the twin version of a new wall light by Cone Fittings Ltd. It features a special ball joint which, whilst meeting all reasonable demands for adjustability, cannot be rotated more than one full turn, thus eliminating the risk of winding up the flex. 8, 9, 10, three of the Harris and Sheldon 'Fantasia' range for the new Philips 'Fantasie' lamps; the outer glass of the two-glass pendant is available in red, green or amber, whilst the metal may be supplied with black, silver or copper finish. Various types of ceiling fixings are available for grouped pendants.





This page: 1, 2, new designs from Scandinavia, introduced recently by Scandia; the cone-shaped tops, and bottom and top rings of the 'Chinese Lanterns' are teak. 3, 5, two more of the Philips 'Gala' range; the pendant is available in single-light versions, and for lamp sizes up to 100w treble and 150w single. 4, counter-balanced adjustable wall bracket by Cone Fittings.



Right, examples of the 'A-Plan' domestic fluorescent fittings shown by Atlas in their demonstration flat; they indicate the ease with which pelmet and similar 'built-in' lighting effects may be achieved. Above is the bedhead unit in the same range, in which the diffuser is a resin bonded fabric, giving a particularly domestic character to the fitting.

Electrical Engineers' Exhibition 1961

Two reviews of the exhibits

(1) by an architect

(2) by a lighting engineer

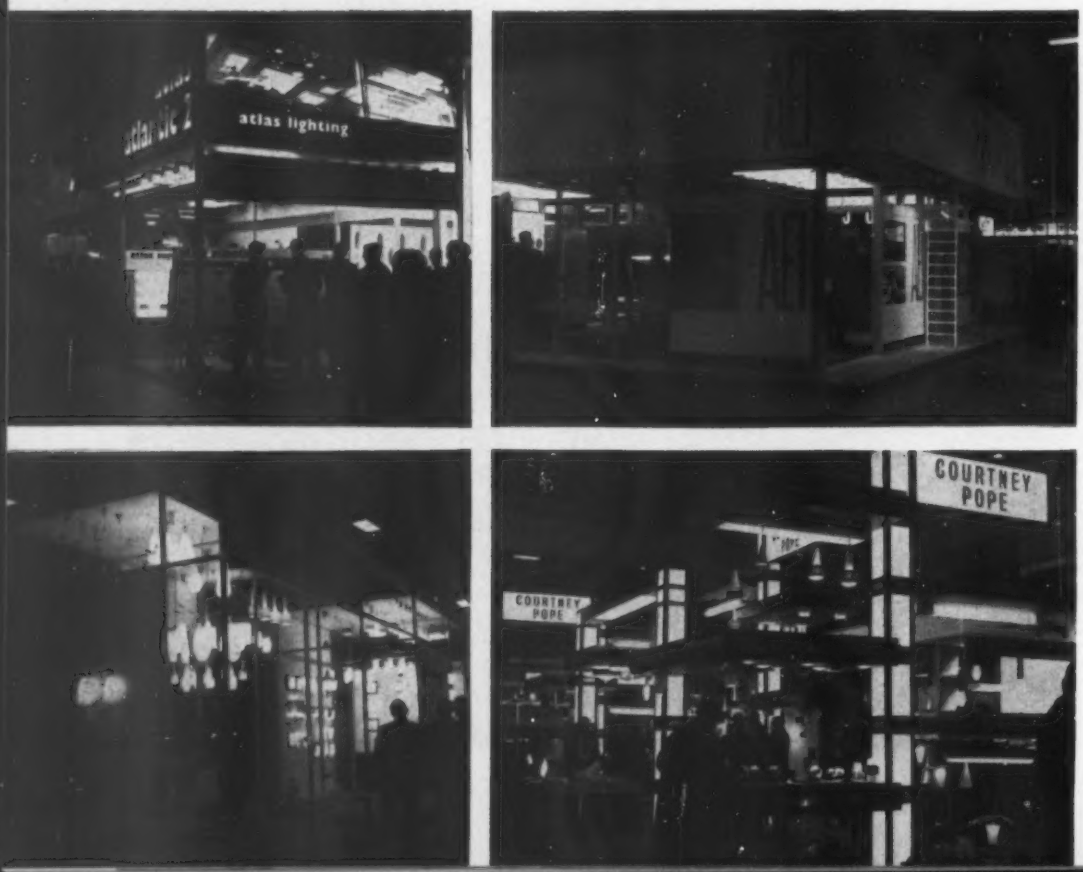
(1) By Derek Phillips, ARIBA

ARCHITECTS ARE ALWAYS COMPLAINING about the price of lighting fittings and whilst this must be due in part to the heavy discount structure peculiar to the electrical industry, I wondered as I wandered around this year's Electrical Exhibition at Earls Court how much the price of lighting fittings is increased by this annual jamboree which to the lighting industry alone must cost a quarter of a million pounds. The building industry can only afford an exhibition of this magnitude once in two years, lasting for two weeks which seems a sensible time when one considers the large erection cost of stands. A visit to 'strike-beset' Earls Court on the opening day of the Electrical Exhibition this year when many of the stands were unfinished (reducing the effective span to only four days) made me wonder even more how long lighting companies will go on paying the piper when they seem in no position to call the tune. The reason extracted from most manufacturers was 'we can't afford not to be here'; yet it seems far from clear 'why not' since there was little new equipment to be seen and there must be cheaper ways of keeping in touch with customers.

In brief, ASEE 1961 was memorable for me for still further improvement in stand design, a general refinement of detail in ranges of fluorescent fittings without any sensational change of approach, the absence of radical developments in luminous ceilings, anarchy in fluorescent lamp colours, the most concerted attack yet made by the fluorescent lamp on the home, and quite the most interesting entrance hall design this year by Atlas Lighting.

Stand design

In stand design there was a return to wood for the main construction, and a marked similarity could be discerned in the stands of Atlas and AEI Lamp and Lighting (the more marked since they stood cheek by jowl) of Churchouse Ltd, and other electrical stands such as MEM and MK. These



Top, the Atlas and AEI stands, both two-deckers. Bottom, the Churchouse and Courtney Pope stands

simple and straightforward stands contrasted with the 'Susie Wong' approach of the Courtney Pope stand. The latter stand was described to me as 'the hard sell' and if my judgment of the difficulty of seeing any fitting properly is correct I should say it wasn't only 'hard' but pretty well 'impossible'.

Another stand which appealed to me visually was the Hoover stand, designed by one of their staff designers, which employed a series of coloured cylinders containing lights concentrated on to displays of fractional motors.

New ranges of fluorescent fittings

The simple fact that the fluorescent lamp is fundamentally an efficient linear source of light is gaining ground, and manufacturers are at last grasping the idea that irrelevant perforations and frills serve only to make their fittings look silly. New ranges of fluorescent fittings are in the main simply and well designed to suit a functional need and much effort has gone into solving the fundamental problems of maintenance, installation and simplicity of operation. The new 'Atlantic' range by Atlas looks pretty much like the old 'Atlantic' range but has advantages in refinement of detail. The new range of fittings by Troughton and Young based on a twin-lamp powerpack uses the new slim section gear with lamps at the sides permitting a much reduced overall section, and twin-lamp diffuser fittings of as little as 4 in. total depth are available. Thought has also been given in this range to the problem of extended rows of either industrial or diffuser fittings.

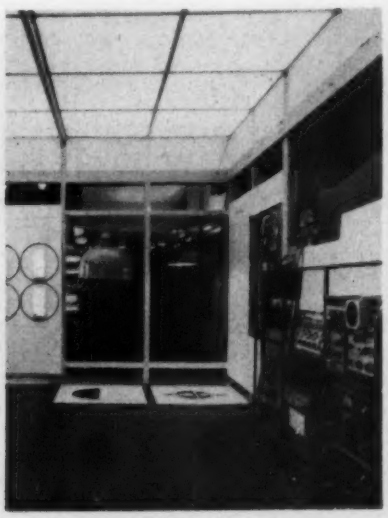
Ekco-Ensign displayed a new intermediate range between their Atlas/Ekco 'Superslim' pack and their 'Essex' range . . . similar in section to the former only larger; at the time of the exhibition neither information nor supplies were available. Harris and Sheldon and Cromptons also showed new ranges, but neither of these appeared to be any advance on 'family' ranges already available from other manufacturers, whilst the Crompton range seemed a step backwards from their original 'New Range' which in appearance has withstood the test of time remarkably well and still remains one of the best and most direct approaches to fluorescent fittings design.

The 'Streamlite' range introduced during the year by Philips should prove of considerable use to architects when used in its basic form; it provides a small section batten for one, two or three lamps, the lamp-holder design permitting minimal overall lengths of 24 $\frac{3}{16}$ in., 48 $\frac{1}{16}$ in. and 60 $\frac{7}{16}$ in. for the 2 ft, 4 ft, and 5 ft lamps respectively—a useful factor where planning is tight.

Also of interest are the claims for higher efficiency lamps and circuits. The Atlas

Unconventional display lighting on the Hoover stand.

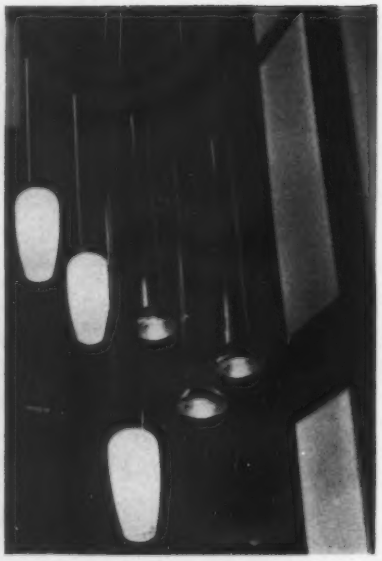
New fluorescent fittings by Troughton & Young shown as single and extended units.



Left, Atlas new 'Atlantic' fittings displayed revolving against a background of seascape and glare. Right, the Isora luminous ceiling as part of the stand fitting on the AEI stand.

Atlas 'A-Plan' domestic fluorescent fittings.

Fittings for use with the Philips 'Fantasie' lamps; left, on the Harris and Sheldon stand, right, on the Courtney Pope stand.



'Super 8' circuit uses a single control gear unit to operate two 8 ft lamps rated at 85w each to give an average through-life output of 6,300 lumens per lamp for a 3,500K white lamp. Making allowance for the higher watts loss in the gear this will give an overall efficiency of 61 lumens per watt, or some 22 per cent more than that from two 5 ft 80w lamps of the same colour.

Similar figures are claimed by Troughton and Young for their 8 ft 110w Westinghouse 'High Output' lamps which give an average through-life output of 7,900 lumens for the 3,500K white lamp or, when loss in the gear is taken into account, 62 lumens per watt. Three fittings are available for use with these lamps: a twin batten, twin diffuser, and twin open reflector for industrial use. When these lamps are burned continuously a life of 18,000 hours is claimed, with rather more than 9,000 when switched every six hours. Are British made lamps just not as good? or are these claims extravagant?

Ceilings

Luminous ceilings are evidently no longer news, and where these were to be found they were used more as a part of stand design than as individual exhibits. Particularly successful in this respect was the Isora ceiling shown on the AEI Lamp and Lighting stand. Harris and Sheldon have introduced a 24 in. Paragrid panel in addition to their present 16 in. size which should further increase the usefulness of this product. During the year the GEC introduced to this country the American 'Infinilite' ceiling, of which vast areas exist in the USA. The only installation I have seen of this is externally in the canopy of the Carlton Tower Hotel in London where I fancy London grime will not be long in taking its toll in diminished lumens. The GEC still appear to be having difficulties with the injection moulded polystyrene panels which at Earls Court varied greatly in colour. This ceiling does, however, have one characteristic which others lack; it is 'non-modular' in that there are no perceptible divisions or support sections so that any irregular shape can be filled in, a not inconsiderable advantage.

If one searches hard enough almost any size can be adopted for 'modular' reasons, and on the Courtney Pope stand an area was devoted to the company's increasing activities on ceilings. Here the module adopted was 20 in., half of 40 in. of course, or 3 ft 4 in. as used in some school construction. A special Bowaters board tile was used being interchangeable with special recessed lighting equipment and integral diffusers.

Colour

The colour of one manufacturer's standard fluorescent lamp may vary so much from that of another bearing the same standard colour on the label, but from another

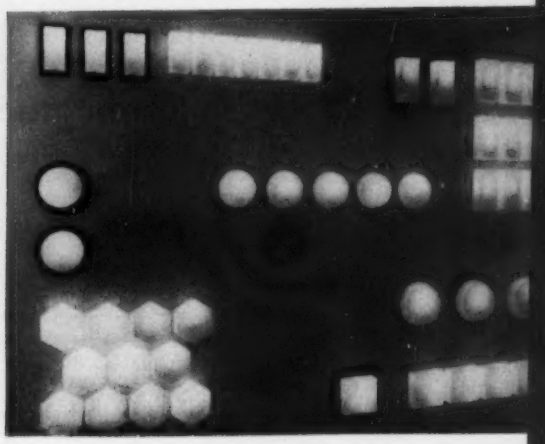
stable, that it is impossible to use them in the same installation. Furthermore the colours of the lower loaded lamps, 3 ft and 4 ft, vary from the same nominal coloured 5 ft lamp. The correct colour lamp is with difficulty put into a new installation, but rarely is it used for replacements. This is the present position, and bad enough it is, but what the position is going to be like in the future I shudder to think. AEI have produced a new standard lamp, the 'Kolor-rite', which is said to have colour characteristics close to sunlight, thus increasing the list of possible errors. If this were not enough Atlas have added some secret ingredient to their standard north-light, natural and de luxe warm white lamps to make it impossible for lamps of another manufacturer to be matched with them. Since Atlas, I believe, make more fluorescent lamps than any other company they are in a strong position to dictate policy, but somewhere, sometime, someone is going to have to clear up the mess and get some rational standardisation with close colour tolerances and rather fewer variables before we can be said to have reached anything like a satisfactory situation. It mighn't be a bad idea if someone concentrated on one of the real problems, the elimination of flicker, still far from solved.

Home lighting

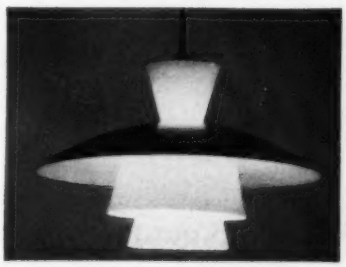
It is remarkable that it has taken so long for any serious attack to be made by the fluorescent lamp on the home. We have had, of course, the Atlas 'Kitchenlite', and very good it has been, but this and the Courtney Pope 'Briteglo' ceilings have confined themselves to the utility areas, bathroom and kitchen. Now with the AEI 'Netaline' fitting, Atlas are being challenged in this field, and Atlas themselves have produced a real pioneering range to cover every aspect of home lighting, their 'A-Plan Fluorescent'. This range is well designed and cheap, the price of fittings being no greater than those flamboyant table lamps and shades which do little more than light themselves. For example a 2 ft desk lamp costs £3 18*s* 4*d*. The designs are simple and will fit in with the clean lines of the modern home, 2 ft, 4 ft, and 5 ft fittings being available; wood ends help to soften the blow. Fittings are available for the drawing-room for curtain lighting, normal space lighting from ceiling mounted units, wall fittings, and special shelf display lighting, as well as picture lights; for the bedroom there are dressing table lights and bedhead fittings. Such courage deserves success.

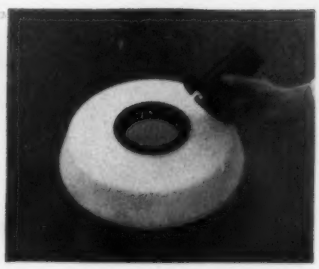
Tungsten fittings

Perhaps the most interesting conclusion reached by the majority of manufacturers was that the Philips 'Fantasie' range of lamps, which were designed to act as their own fitting, require some additional treat-

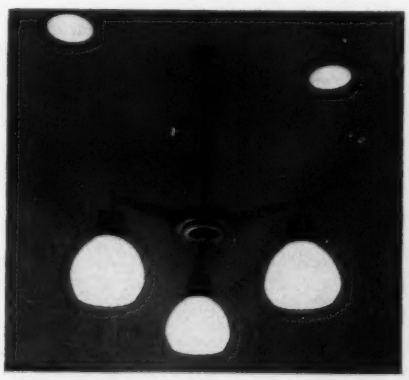


Left, the new continental range of glassware by Philips. Right, glass lighting 'bricks' shown by Churchouse.





Left, the 'Petersham' fitting by Harris and Sheldon. Right, the simple method of supporting the GEC 'Executive' glassware range.



Contrasts in design seen at the exhibition.

ment—if only a spinning—to hide the lamp-holder. Whilst it is clear that this decision is in the interest of the manufacturers it is certainly sustained on aesthetic grounds and some interesting results were seen. The most comprehensive range was to be found on the Harris and Sheldon stand where clusters of special fittings using the Philips lamp made a lively central display. Other manufacturers with similar thoughts were Falks and Courtney Pope whose long cylinders emphasised the shape of the lamp very well.

The Scandinavian influence in tungsten fittings design continues with the GEC showing three of the best Danish fittings from their associates Louis Poulsen. Architects will already be familiar with the fitting designed by Arne Jacobsen for the Rodovre Town Hall, one of the few fittings which disproves my theory that a functional fitting cannot also be decorative. The Louis Poulsen influence can also be seen in the 'Petersham' fitting of Harris and Sheldon for which a ceiling mounted version is also available.

The GEC showed their 'Executive' range of tungsten fittings for which an interesting method of supporting the glassware has been developed. A special metal spinning is fixed on the top of the glass by means of clips which enables the glass to be supported on a simple black spinning by means of a bayonet type catch. I understand that it has taken some time to perfect this simple method, but like all simple ideas it was not easily arrived at. Another in the same category is the method adopted by Courtney Pope for colouring their low voltage reflectors to achieve beams of coloured light; the old method of having a separate reflector for each colour has been replaced by a simple set of coloured glasses designed to withstand the high lamp temperature and which clip on to the lamp. A set of six colours costs £4 enabling the colour of the light beam to be altered in seconds with no deterioration of the reflector colour.

A source of pleasure to me was the radical change evident on the Churchouse stand, no doubt due to the takeover of this company by Crabtree and the influence of their staff designer R. J. Reynolds. Among a wide range of decorative fittings of interest was a series of lighting 'bricks' which can be used externally for signs on buildings; they are simply designed and could have a good future.

Whilst design generally is making headway everywhere there are still small pockets of resistance, and I must confess that I was sustained on my weary way around this year's ASEE by a little incident that occurred on one of the stands. On pointing out to a representative a peculiarly revolting piece of design I asked why they had not employed an industrial designer, and was informed with a look of sympathy 'well you see this is not an industrial fitting'.

ELECTRICAL ENGINEERS EXHIBITION (Cont.)

(2) By J. B. Harris, AMIEE, FIES

'TO SHOW OR NOT TO SHOW' must have exercised the minds of many executives this year and although the lighting industry was well represented, a number of well-known trade marks were conspicuous by their absence.

With few exceptions the stand displays seemed to lack much of the sparkle of former exhibitions. Perhaps, in spite of claims to the contrary, we must now become accustomed to a sameness of appearance in certain ranges of fittings of different manufacturers. A case of 'plus ca change . . .' no doubt.

Viewing the subject as a whole however, it is apparent that lighting fittings quickly multiply (Parkinson's Law?) to embrace every type of lamp produced. This is no disadvantage, of course, provided that the quality of the materials and workmanship are high and the prices charged are 'fair and reasonable'.

Some of the exhibitors were content to show only new lines even if this resulted in a rather sparse display, whilst others included stock items for the benefit of those whose memories needed refreshing. In my own opinion for the exhibition to be successful two things are necessary. Firstly, the visitor must be given full information on the many and varied products of the industry as a whole; secondly, the exhibitor must pay heed to the critical observations of the visiting engineer. Incidentally during the period of the exhibition lighting fittings on the stands are given an almost uncontrolled accelerated life test and the weak points in design, if any, are soon discovered.

Once again the spotlight was centred on fluorescent lamps and fittings and the perennial battle of the lumen was given added piquancy by Troughton & Young's introduction of a long-life American contender for the 'all white lumen/watt championship of Great Britain'. The first round seems to have been won by Atlas with their revolutionary 'Super 8' twin 8 ft 85w circuit, which appears to possess so many technical and economic advantages as to make its use inevitable for many high level illumination schemes. Certainly the use of one relatively small and compact control gear unit for operating two 8 ft tubes offers many interesting possibilities for continuous lines of light. Perhaps by installing the gear between two tubes fitted in line we will be able to reduce the total sheet metal required for concealing the necessary wiring.

Philips are still marketing their high loaded 'Reflectalite' 5 ft 125w tube and the engineer who might be concerned solely with light output as such will also be interested in a stop press GEC announcement. This was to the effect that, following increases in the luminous efficiency, their 8 ft white and warm white lamps now have the highest light output in Europe. Indeed the alternative fluorescent lamps now available for achieving maximum light at minimum overall cost are so many that the practising engineer might well be excused if he leaves the ring a little lumen punch drunk. (May we be spared the introduction of a power groove or corrugated tube.)

To add to the user's bewilderment there has been much renewed activity in the 'whiteness with brightness' campaign, and the fluorescent lamp palette must now be enlarged to take care of a spate of newly introduced 'colours'. Following the market-

ing of the Philips 'Colour 34' and AEI 'Kolorite' lamps, each of which produces an acceptable 'natural' lighting effect for pictures, fashion fabrics, etc., we now have new Atlas northlight, natural and de luxe warm white tubes, all specifically designed to give improved colour rendering at the red end of the spectrum. Far be it for me to try to solve this complicated question of colour, but I wonder if we might reduce the 'whites' to three in number. Why not settle on a natural tube similar to the present 'noon-sunlight' version for general purpose use, a de luxe white for domestic and decorative interiors and a northlight for industrial colour matching. Making allowances for variation in sizes, ratings and internal reflectors, even this proposal would mean the manufacture of dozens of different types, but at least rationalisation of colour might lead to less consumer frustration and lower prices. It might also enable research engineers to concentrate on reducing tube colour appearance tolerances thereby avoiding visible differences between lamps bearing the same designation.

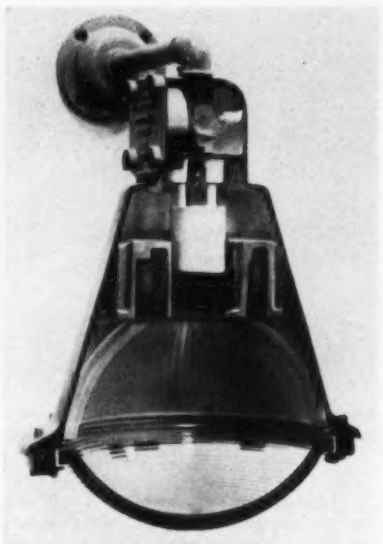
There now appears to be a more serious attempt to popularise the circular fluorescent lamp and a number of firms were exhibiting fittings having an appearance appropriate to use in the domestic fields. An interesting Philips circuit is the tungsten ballast operated 16-in diameter 40 w fluorescent lamp which unfortunately has to include a filament heating transformer. Perhaps we may look forward to a truly gearless circuit for this very select family.

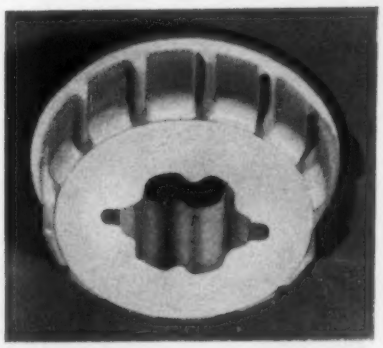
No new sodium lamps were seen, but AEI showed an efficient looking linear floodlight designed for use with their 3 ft 200w sodium lamp, whilst Philips had a prototype 2,000w, MBF lamp.

The only outstanding innovation in the tungsten lamp world is the Philips 'Fantasie' range. The two types available are of contemporary shaping and apart from concealment of lampholders there is no need to use additional shades. I appreciate the simplicity of the specially designed fitments offered by Harris & Sheldon and others, but I feel fairly certain that a g.l.s. lamp and a contemporary glass is a much more economic proposition. Once again tungsten lamp bulb size reduction is in the news and AEI now propose to use a new and smaller 300w lamp in a 16 in. diameter industrial dispersive reflector.

The installation in Leicester and Birmingham of vending machines for 'Neta bulb' lamps should have good results. I await with interest an extension of this experiment to cover the sale of fluorescent tubes.

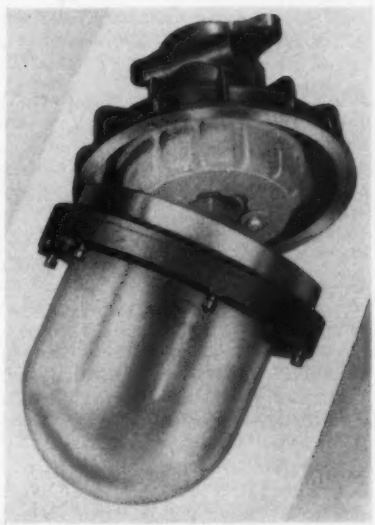
Basic component construction is now an established feature in the design of nearly all ranges of fluorescent and tungsten lamp fittings. More firms have become aware of the many attendant advantages of manufacturing and assembling from a limited number of parts, a line of action which I think was first pioneered in the fluorescent





Above, section through a Holophane flameproof/weatherproof fitting for mercury lamps and using enclosed ring choke.

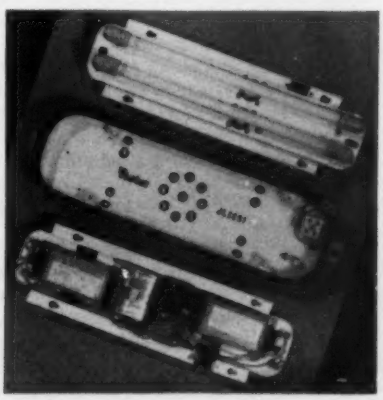
Top right, the integral choke used by Victor Products in their flameproof mercury fittings; right, a fitting showing the position of the choke.



Right, Walsall Conduits 'Orbit' circular bulkhead fitting using 100-watt tungsten lamp.

Below, Revo fluorescent bulkhead fitting.

Below right, Victor Products fluorescent bulkhead fitting showing detachable gear tray.



Left, decorative table standard by Falks. Right, pendant from the GEC 'Executive' range.

Looking down on the Lumitron suspended ceiling designed for use with a varicty of diffusers.

fittings field by Crompton Parkinson. This firm's new 'Crompack' range of interchangeable component fittings is quite well designed mechanically and electrically and each of the three lengths of basic channel is supplied complete with its lamp. The new Philips 'Streamlite' series includes battens for three 5 ft 80w tubes and an interesting component is a shallow depth cut-off screen recommended for use with reflector lamps. Ekco no doubt feel that there is a strong demand for top quality '2nd class' equipment and so they are shortly introducing an 'Intermediate' series of fluorescent fittings which will be priced between their 'Essex' and 'Superslim' ranges.

Perfection in manufacturing technique has enabled R. & A. G. Crossland to add a one piece, round ended, stove enamelled trough reflector to their standard stock fittings.

Atlas Lighting have completely redesigned their 'Atlantic' range and a close inspection of the new luminaires bears out the truth of their many claims. Ease of fixing, assembling and wiring on site have obviously been given detailed consideration and I liked in particular the appearance and light control qualities of a new opal and clear reeded plastic diffuser attachment. The 8 ft twin lamp fitting will accommodate the new 85w fluorescent lamps, but I must admit that in this case the single control gear unit looks very lonely in its long channel housing.

Fluorescent fittings for modular ceilings, individually designed commercial and decorative fittings and equipment for special industrial usage were all well in evidence and it was interesting to learn that many standard items are the direct result of co-operation with users having special requirements.

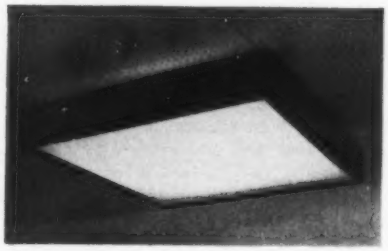
A wrap-round opal 'Perspex' diffuser by Major Equipment can be easily clip-fixed to a ceiling plate containing control gear for one, two or three 4 ft or 5 ft tubes. Successful selling of the well-designed Simplex p.v.c. sheathed anti-corrosion battens has led to the extension of this series to cover single and twin 8 ft lamps and I like the new sheathed wire guard which is fitted for the purpose of mechanical protection.

Completely dustproof and weatherproof fittings are essential for many industrial applications, and I often wonder whether some users think that the units need never be cleaned. The new Revo 2 ft 40w industrial dustproof fittings and an elegant looking Ekco 'Perspex' diffusing fitting for yards, forecourts and canopies, will be most efficient when first installed. Unless there is regular and frequent washing and antistatic treatment, however, these units will very soon emit only 'black' light.

A number of firms have awakened to the advantages of the 12 in. 8w miniature fluorescent lamp, and AEI, Major, Herman Smith, Victor Products, Revo, Philips and Veritys are among those offering bulkhead fittings, the running costs of which are often far less than a tungsten lamp equivalent. When making cost comparisons it must be remembered that because the life of a tungsten lamp tends to be shorter when it is operated horizontally within a small enclosure, labour costs of lamp replacements will be very high. The twin-lamp fluorescent bulkhead of Victor Products possesses several special features of engineering design, all of which are dealt with in detail in their descriptive brochure. Two outstanding points are the use of resilient moulded plastic lampholders and the provision of a socket and detachable reflector gear assembly to facilitate wiring and maintenance.

Inspection and maintenance work in garages, factories and the like often calls for a robust portable fluorescent fitting, and Herman Smith have recently developed a most useful adjustable (vertically and horizontally) pedestal fitting for housing a 2 ft 20w tube.

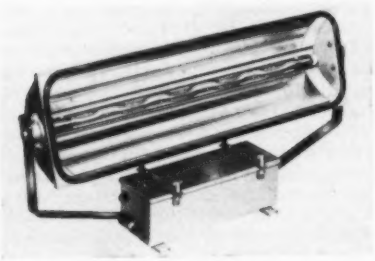
Troughton and Young had three simple fittings on show for use with their Westinghouse 8 ft 110w fluorescent tubes. I liked their new range of single and twin lamp basic battens which can be utilised as individual units or fitted together to form



SLR fluorescent ceiling fitting with mahogany frame.

Ekco-Ensign enclosed fluorescent weatherproof fitting.

Alumiunium high bay reflector for use with 1,000 W mercury lamps shown by AEI.



AEI floodlight for use with 200W sodium lamp.

'Wrap-round' opal 'Perspex' diffuser by Major Equipment.

continuous or broken lines of light. This means of fixing and wiring is a useful alternative to continuous trunking. The latter of course is sometimes indispensable particularly in industrial buildings, and many new and improved designs were being shown.

Although it is often stated that overall luminous ceilings produce a monotonous appearance, they are still proving popular in many applications. A move towards the avoidance of the sometimes unsightly 'T' bars has recently been made with the introduction of the GEC 'Infinilite' panel. The installation of these plastic circular cell louver diffusers, which are clipped together to cover a complete ceiling area, is effected by means of levelling screws and strainer wires which are well concealed at normal angles of view.

The elegant effects obtained from using small mesh plastic louvering seem to have received general acceptance in spite of the difficulties in cleaning, and most firms now employ 'egg-crate' shielding made up of ½ in. square cells. The 'Paragrid' bi-planer louver tile of Harris & Sheldon, now offered in a 24 in. square, is being used in both fittings and luminous ceilings. For utilisation above the latter, the firm have developed a simple but effective centrally slotted channel, supplied in 8 ft lengths, to which control gear trays and lamps of any size can be attached.

Developments in the production of panelled ceiling elements are now so rapid that fittings manufacturers are well advised to keep in close contact with the various firms who specialise in the fabrication of thermal and acoustic tiles. Courtney Pope have made a special study of this particular subject and were demonstrating a 3 ft 4 in. modular diffuser which was supported on the framework of a new Bowaters 'Versatile' ceiling designed on a 20 in. square module. The provision of a network of socket outlets above the ceiling will facilitate the repositioning and interchanging of ceiling panels and lighting diffusers.

In an attempt no doubt to encourage the use of fluorescent lamps in warmly furnished rooms of non-contemporary styling, SLR have designed a 2 ft square shallow depth ceiling fitting which has a 4 in. deep polished mahogany diffuser frame surround. This firm has also produced a well designed range of wall bracket and pendant tungsten lamp fittings which could do much to improve the lighting standards of many of our hospitals.

Although I would hesitate to instal AEI's bare fluorescent lamp 'Netaline' in an office or lounge, it certainly would not be out of place in a kitchen or garage. Whether one likes the cantilever method of suspension is a matter of personal taste, but the most radical departure in design is the fact that the lamp operates on a 60-watt resistance wire circuit.

Plenty of new designs of commercial and decorative tungsten lamp fittings were exhibited, outstanding of which was the GEC 'Executive' range of opal glassware units, and the new exterior lanterns and 'lighting bricks' of C. M. Churchouse. The latter also showed a collapsible wooden armed multi-lamp pendant which will be particularly easy to transport and store.

In an effort to create something new, many firms resort to gimmick designs which would surely never find a sale if practical engineers were consulted. Why, for instance, should one want to use an 18 in. long metal cylinder to conceal a small lampholder attached to a bare lamp flexible pendant.

Rowlands and other firms were displaying some simple but effective mushroom and trough units for the exterior lighting of gardens, but I would suggest the advisability of ensuring that there is some means of weatherproofing the lampholders.

The non-appearance to date of a heat-resisting dye which can be applied to the bulb of a tungsten reflector lamp has hitherto made necessary the use of a separate tinted reflector, or a large external colour filter. The Courtney Pope 'Colorlite' glass cylinder which fits around a 12v 48w spot-lamp is one neat and simple solution to the problem of obtaining coloured spot-lighting effects.

A major advance in choke design by Circulume Ltd, is the production of a circular integral choke capable of satisfactory operation within the confines of a large variety of enclosed mercury lamp fittings. In particular this is a method of solving the practical and economic problems associated with the provision of choke control gear in flameproof fittings. It can also facilitate the conversion of installed weatherproof/flameproof tungsten lamp fittings to use with mercury lamps. Power factor correction will have to be carried out remotely. Both Victor Products and Holophane have adopted these new type chokes in their standard flameproof lighting equipment and the latter firm is also using a small enclosed choke in the 50w MBF/U 'Widerlite' bulkhead.

Now that there is a tendency for tungsten lamp bulbs to be reduced in physical size, the uninitiated will begin to overlamp fittings with a consequent risk of overheating of cables and component parts. In the circumstances manufacturers would be well advised to indicate on each fitting the maximum lamp rating with which it should be used.

I concluded my article last year with some comments on the visual discomfort arising from the often pronounced end-flicker of many fluorescent lamps. Once again I would comment on this irritating characteristic, which few manufacturers will readily admit exists and for which even fewer provide some means of mitigation. Perhaps they have all decided to accept my complaints with a pinch of phosphor.

LIGHTING ABSTRACTS

OPTICS AND PHOTOMETRY

535.241

973. History of the photometric quantities and connected problems.

D. HAHN and U. SCHLEY, *Lichttechnik*, **13**, 58–63 (*February* 1961). *In German.*

The first part of the paper is historical and describes the steps in the search for a primary standard of luminous intensity, culminating in the present full radiator (black body) standard operating at the temperature of solidification of platinum. The way in which the development of this form of standard has been influenced by progress in radiation theory is shown by a full-page chronological table. The effects of changes in the radiation constants, particularly c_2, are discussed and the accepted values for V_λ are criticized. The advantages of a standard operating at the much higher temperature of solidification of iridium (2,716°K) are considerable, and work on this form of standard is now being carried out in Berlin. J. W. T. W.

628.931

974. Photographic representation of luminance distributions.

H. GRIEF, *Lichttechnik*, **13**, 53–55 (*February* 1961). *In German.*

It is not easy to appreciate the luminance distribution in a visual field by looking at an ordinary photograph, even when every precaution is taken to give a true representation. By repetitions of the photographic process, using the technique of equidensitometry, it is possible to produce a picture showing well-defined 'contours' at selected luminance levels. Examples are reproduced in the paper. The author describes the many precautions which have to be taken if reliable and useful results are to be obtained. J. W. T. W.

535.241 : 612.843.36

975. Maximum value of the relative luminous efficiency of radiation for scotopic vision.

J. KROCHMANN, *Lichttechnik*, **13**, 102–105 (*March* 1961). *In German.*

The maximum luminous efficiency of radiation for photopic vision (K_m) is 680 lm/w, based on the present accepted values of the radiation constants and 60 cd as the luminous intensity of the primary standard. The relative values of the luminous efficiency for scotopic vision were agreed by the CIE in 1951 and it was decided that the absolute values should be based on 60 scotopic cd for the luminous intensity of the primary standard. This gives $K_m' = 1{,}746$ lm/w. Other proposals have, however, been made for the scotopic units, e.g. 1 scotopic cd = 1 photopic cd at a colour temperature of either 2,360°K or 6,772°K. The latter results in the same maximum luminous efficiency of radiation for both types of vision, i.e. $K_m = K_m'$. The author discusses the advantages and disadvantages of the three proposals and gives a table showing for the three systems, the ratio of the scotopic to the photopic luminance of a surface at different colour temperatures. J. W. T. W.

621.327.43

976. Design and application of outdoor fluorescent lamps.

W. J. KARASH and A. L. HART, *Illum. Engng.*, **56**, 106–110 (*February* 1961).

Fluorescent lamp performance under outdoor operating conditions is normally adversely affected by low ambient temperatures and cooling winds. Lamps have now been developed to overcome these effects by shifting their optimum performance to a lower part of the temperature range. The lamps, 8 ft in length, are available with 1½-in. diameter bulbs, have a nominal loading of 1·5A and have an argon/neon filling gas. Performance characteristics of a jacketed version of the new lamp, and also of an unjacketed version in a sealed fitting, are given. P. P.

LAMPS AND FITTINGS

977. Air ions using ultraviolet lamps. 621.327

R. NAGY, *Illum. Engng.*, **56**, 112–115 (*February* 1961).

Negative air ions are oxygen molecules or dirt particles to which have been attached an extra electron. Their generation by bactericidal lamps is discussed, the effect being similar to that in a photo-emissive cell. Tests on a number of lamps and on a number of metals are reported and the design for an effective ion generating unit is discussed. The harmful and beneficial effects of positive and negative air ions are referred to, with copious references to the original published papers. P. P.

978. It's wood under the street lights. 628.971.6

E. STEPHENSON, *Public Lighting*, **26**, 51–53 (*March* 1961).

This abstract is from the basis of an article which originally appeared in *Woodwork in Industry* (February 1961) for the use of which acknowledgments were recorded to the editor and author for reproduction in *Public Lighting*. Describes in detail the making of wood street lighting lamp standards and gives the limited experience of their use to date. B. C. O.

628.975

979. Nomogram for calculating the range of visibility of light signals.

W. ADRIAN, *Lichttechnik*, **13**, 100–102 (*March* 1961). *In German.*

The range of a light signal of luminous intensity I is given by the formula $t^2 = I\sigma^t/E_{min}$ where t is the range for an atmospheric transmission σ per unit of t and a state of visual adaptation for which the minimum perceptible illumination at the eye is E_{min}. The solution of this equation by direct calculation is not straightforward and the author has devised an alignment chart consisting of a logarithmic network and a family of curves, each for a different value of σ. With this chart t may be found quite simply in two operations. The value of E_{min} depends on the general luminance of the field of view and the scale for E_{min} is accompanied by a scale for the background luminance, based on the data at present available. J. W. T. W.

980. Protection against ballast failure. 621.329

S. HELM, *Illum. Engng.*, **56**, 139–140 (*March* 1961, *Section* 1).

Three types of fluorescent lamp ballast failure are described and the requirements of a suitable protective device to cater for all these types of failure are considered. A recently developed protective device is described, the device being primarily temperature sensitive and only partially current sensitive. The device will detect excessive temperatures likely to cause leakage of ballast filling material yet be insensitive to failures external to the ballast not likely to produce a hazardous situation. P. P.

LIGHTING

981. Urgency No. 1—Relighting. 628.972

Illum. Engng., **56**, 1–10 (*January* 1961).

The recently revised American recommended illumination levels are being put into practice not only in entirely new lighting installations, but also in the relighting and/or redecoration of existing installations. Photographs and brief descriptions illustrate how this has been brought about in conversions of factory and warehouse premises into offices and in the relighting of a school, factory, office, church and shop. Levels of the order of 150 lm/ft² become commonplace. P. P.

612.843.367

982. BCD appraisals of luminaire brightness in a simulated office.

W. ALLPHIN, *Illum. Engng.*, **56**, 31–38 (*January* 1961).

A panel of over 100 subjects made settings of the fittings' luminance in a simulated office in order to produce the BCD (borderline between comfort and discomfort) sensation. Six arrangements of the fittings were studied, the fluorescent lamps in the fittings being on a push-button operated dimmer circuit. The results showed that BCD is a meaningful concept to most inexperienced subjects, that these subjects were consistent in their appraisals, but with possible upward or downward proportional shifts in the luminance settings on repeat occasions, and that their rates of change of light and dark adaptation differed considerably from one subject to another. P. P.

612.843.367

983. Further data on discomfort glare from multiple sources.

S. K. GUTH and J. F. MCNELIS, *Illum. Engng.*, **56**, 46–53 (*January* 1961).

A team of twelve subjects were first 'calibrated' to relate their glare sensitivities to earlier (1949) data. The subjects were then used to make appraisals of the BCD (borderline between comfort and discomfort) sensation in a simulated room in which the ceiling was divided into sixty-three elements in nine lengthwise rows. Ten combinations of these rows were studied in an attempt to determine the additive nature of discomfort glare from a number of the elements exposed simultaneously. An exponential function related to the number of elements (sources) was found to give good agreement with the experimental findings. Other methods of additive glare evaluation to be examined included three based on relating the glare from individual sources to equivalent sources on the line of sight, and a method of evaluation proposed by Fry (Abstract No. 407). P. P.

984. Current recommended practice for sports lighting. 628.971

Illum. Engng., **56**, 59–104 (*February* 1961).

Prepared by the Committee on Sports and Recreational Areas of the American IES, this report deals with recommended illumination levels satisfactory to both player and spectators, quality requirements necessary for good visibility and recommendations on types of lantern, mounting heights and locations for specific sports. Photographs, diagrams and tabular data are used to illustrate typical installations. In a series of appendices is given information on floodlight aiming, maintenance, horizontal illumination calculations, power supply and distribution and numbers of floodlights. Recommended layouts for fifty-four different outdoor and indoor sports are reproduced. P. P.

985. The march of time. 628.971.6

H. CARPENTER, *Public Lighting*, **26**, 41–50 (*March* 1961).

A comprehensive survey of the development of street lighting technology over the past twenty years. Gives many valuable tables of annual costs and interesting graphs produced from the replies to a comprehensive questionnaire circulated to Lighting Authorities. The author discusses in detail the advantages gained from the all-night operation of street lamps. Suggests street lighting on the new motorways would be beneficial but there is a good deal of research work to be done in order to provide a satisfactory method of lighting and refers to the experimental work done in this connection by the Road Research Laboratory. Finally suggests methods of reducing administration costs by streamlining organizations and that the new Code of Practice should include for a greater tolerance in mounting heights, should give examples of good lighting practice, information on maintenance and recommendations on lighting and extinguishing times. B. C. O.

628.971.6

986. Visual aids to driving on urban roads with special reference to street lighting.

G. BERRY, *Public Lighting*, **26**, 19–22 (*March* 1961).

This lecture, one of the triology on 'visual aids to traffic' was delivered at the Fifth National Study Week in traffic engineering held in Nice. The author compares the growth of road traffic generally and gives tables of density of road traffic and casualties in seven European countries. He suggests that as the standard of street lighting increases so does the need lessen for reflector studs, cats' eyes and similar aids. He discusses the main differences in British and Continental street lighting practice and points to the Continental trend of the direct lighting of objects on the road as opposed to silhouette vision. Such schemes appear to be satisfactory but rather expensive. Suggests there should be increased street lighting at peak traffic periods to provide direct illumination which could be reduced to normal intensity after the peak had passed. Such experiments were now being carried out in Coventry with both fluorescent and sodium installations. He discusses the relative values of the light source for lighting particular class of road. Suggests that there is considerable confusion to vehicle drivers by the conglomeration of street signs, bollards, signals, advertisements and vehicle stoplights and co-ordination is essential if maximum visibility is to be achieved at night. B. C. O.

987. The ubiquitous ceiling. 628.972

Illum. Engng., **56**, 118–122 (*March* 1961, *Section* 1).

Ceilings which are too high or too low, cluttered, unsightly or not level present additional problems to the lighting engineer. Ways in which these difficulties have been overcome are illustrated by examples of the concealment of an unsightly ceiling, avoidance of monotony in a luminous ceiling, contending with inviolable architectural requirements and providing good light distribution without clutter in low-ceilinged areas. P. P.

988. Luminous walls: new decorative lighting technique. 628.972

Illum. Engng., **56**, 123–125 (*March* 1961, *Section* 1).

Patterned plastic, glass, metal or wood grilles and frets lighted from behind provide a decorative feature which in addition improves visual conditions by balancing room luminances. The technique, which gives indications of becoming a major element in both residential and commercial interior lighting, is illustrated by numerous photographs and descriptions of recent installations. P. P.

989. Basic plan for golf course lighting. 628.971

D. A. TOENJES, *Illum. Engng.*, **56**, 129–134 (*March* 1961, *Section* 1).

A basic plan for a 350-yard golf course hole is described in which pole-mounted fittings at the tee provide 10 lm/ft² of horizontal illumination for driving off and 3 lm/ft² of vertical illumination at 200 yards distance to follow the ball in flight. Further pole-mounted fittings provide 5 lm/ft² of horizontal illumination on the fairway together with 3 lm/ft² of vertical illumination and 10 lm/ft² of horizontal illumination at the green. Variants of this plan are offered for longer and shorter holes. P. P.

990. Production lighting—a trend in industry. 628.972

Illum. Engng., **56**, 142–145 (*March* 1961, *Section* 1).

Good lighting in industry is now a recognized and widely accepted production factor resulting in higher industrial output and fewer rejects. This has come about as the result of continued progress in lighting techniques and equipment together with reduced relative costs of light. The theme is illustrated by photographs and descriptions of a number of industrial interiors spanning a wide range of manufacturing processes. P. P.

991. Lighting of the Italian 'Autostrada del Sole'. 628.971.6

J. ROCH, *Lichttechnik*, **13**, 167–169 (*April* 1961). *In German.*

The first section of this motorway, which will ultimately run from Milan to Naples, was opened at the end of 1958. Although, for financial reasons, the main roadway is not lighted throughout, some sixty junctions and specially important sections are lit by 250w colour-corrected mercury vapour lamps in prismatic fittings, mounted at 9·5 metres above ground. On the main thoroughfare, twin 'horsewhip' posts are erected on the central reservation; on feeding roads side mounting is used. The average illumination provided is 1 lm/ft² on the motorway and 1·2 lm/ft² at a parking place. J. W. T. W.

621.327.534 : 628.971.6

992. Researches on the best temperature conditions in street-lighting fittings for fluorescent lamps.

J. KROCHMANN, *Lichttechnik*, **13**, 169–173 (*April* 1961). *In German.*

A fluorescent lamp is most efficient when running at a given wall temperature, commonly about 20°C. The temperature actually prevailing during operation depends on the lamp loading, the temperature of the surroundings and the increase over this temperature due to enclosure by the fitting. The author summarises work done by a number of investigators on the relation between these various quantities and the output from the lamp. He gives curves showing the periods during which street lamps are in operation at different times of the year in Berlin and the corresponding mean temperatures out of doors. The effect of wind is too variable to be taken into account. J. W. T. W.

621.327.42

993. Flash-tube illumination in scientific cinematography.

J. RIECK, *Lichttechnik*, **13**, 173–176 (*April* 1961). *In German.*

Describes the circuit arrangements used in flash-tube cinematography (*a*) at normal speeds of 24 frames/sec, (*b*) at high speeds such as 8,000 frames/sec and (*c*) for slow-motion films of plant growth, and the like. In application (*a*) apparatus has been devised for flashing any desired number of tubes practically simultaneously. Specimens of the three types of film are reproduced. J. W. T. W.

IES Activities

THE CONCLUDING ACTIVITIES of the Sheffield Centre included a lecture at the March meeting at which Mr G. V. McNeill discussed the use of coloured light. He opened by reviewing tubular fluorescent lamps, illustrating the effects on various colours of 'white' lamps and also showing how their colour appearance altered according to the colour of the background against which they were seen. In describing the properties of individual lamps and their most suitable applications, Mr McNeill indicated the differences between British and American practice for industrial, commercial and shop lighting. He stressed the importance of considering colour rendering as well as luminous efficiency in choosing a lamp, whilst for existing installations, where high intensities were achieved with poor colour rendering, it might well be preferable to accept a lower illumination by changing to a better colour lamp. He concluded by discussing the likelihood of glare arising from either continuous rows of fittings or luminous ceilings in high intensity installations and suggested that spaced opaque louvers would be more acceptable. For the April meeting, Sheffield Centre staged a Lighting Forum, in which J. B. Machin, a works electrical engineer, J. Whittaker, lighting engineer, and R. Palmer, electrical contractor, discussed their independent and interdependent responsibilities in lighting a large rolling mill. Mr Machin, describing the plant layout, pointed to the limitations imposed on lighting equipment location by the need for access and the presence of overhead cranes; he advocated the use of 1,000w fluorescent-bulb mercury lamps for the rolling and storage areas, and 8-ft, 125w tubular fluorescent lamps in the motor room. Mr Whittaker continued by discussing the lighting requirements and economic factors involved in determining the light source to be used; he also evaluated the glare indices in the proposed scheme. Mr Palmer completed the scheme by detailing the installation problem, comparing and contrasting various distribution systems and discussing the provision of suitable protective and isolating equipment. The panel then dealt with questions from the floor, and a lively discussion ensued to round off a successful evening.

At the IES Nottingham Centre's Dinner and Dance: Dr W. S. Stiles (IES President), Mrs Mountford, Mr G. R. Mountford (Centre Chairman), Mrs Stiles and Mr O. S. Woods (East Midlands Divisional Controller, CEGB).

Members and guests at the Dinner of the IES Stoke-on-Trent Group: front row, Mr B. J. MacCarthy (Chairman, Birmingham Centre), Mr C. F. Small (Group Chairman), Ald A. E. Bennett (member of the Midlands Electricity Board); back row are other officers of the Group.

SOCIAL EVENTS PREDOMINATED as the session drew to a close. Leicester Centre arranged a visit to Rugby School, at which they inspected the newly decorated and relighted chapel. The party then travelled to the Belgrade Theatre, Coventry, for dinner and a performance of 'The Pleasure of His Company'. The Stoke-on-Trent Group held a successful Annual Dinner recently, at which the main topic was lighting as an aid to civic architecture. Alderman A. E. Bennett, proposing the toast to the IES, recalled that the Civic Trust improvement scheme in Burslem had provoked the professional opinion that floodlighting of buildings and improved lighting in the shops were needed to put the final touch to the scheme. Responding, Mr B. J. MacCarthy, Chairman of the Birmingham Centre, stressed the importance of lighting in enhancing the appearance of a community's principal buildings. Whilst complimenting Stoke on its street lighting, he suggested that both public and commercial buildings should be floodlit when redevelopment of the town centre takes place. Nottingham Centre had two crowded days when the IES President, Dr W. S. Stiles, attended the March sessional meeting to talk on the history and activities of the NPL, and on the next evening participated in the Centre's Annual Dinner and Dance. The toast to the IES was proposed by Mr O. S. Woods, East Midlands Divisional Controller of the CEGB, who mentioned the Board's willingness to adopt new ideas for lighting modern power stations.

THE FINAL LONDON MEETING, which followed the Society's AGM, enjoyed an erudite lecture by H. Bruce Allsopp (Senior Lecturer in Architecture at Durham University) on the theme of 'What is good architecture'. Mr Allsopp made it clear at the outset that he did not regard his title as a question and he was not, therefore, going to attempt an answer; he was primarily concerned to show that architectural quality was determined by the prevailing views of the period; the Parthenon, for example, was not considered to be outstanding during the era of Roman supremacy although it is now considered to be a perfect example of the monumental approach. He discussed man's preoccupation with both structural engineering and aesthetic appearance, showing how the inter-relation of the two have varied from prehistoric times.

MISCELLANY

Correspondence

Fluorescent lamp flicker

I cannot agree with Mr T. S. Jones when, in referring to flicker, he says that: 'The standardisation of bi-pin caps for fluorescent tubes has perhaps reduced the need for end shields.'

The periphery of the retina is most sensitive to this form of visual distraction and although it may be subjective in character, the sensation of end flicker can be observed in far too many modern installations. One is even conscious of its presence where lamps are covered with diffusing material or are located adjacent to surfaces producing diffuse reflection.

Cathode glow flicker was observed on the majority of the lighting stands at the recent ASEE Exhibition and is also conspicuous by its presence in the showrooms of many fittings manufacturers. For this reason I am fully in accord with the IES recommendations for the use of opaque shields over lamp ends. In fact, I am surprised that this precaution is not more readily adopted by the lighting industry.

Full marks to Mr R. L. C. Tate for his suggestion of an independent testing station. A great deal of essential technical data relating to proprietary fittings and lighting systems is not readily forthcoming because the smaller firms cannot afford the time and capital necessary for its compilation. A photometric laboratory, set up perhaps by the BLC or ELFA, would undoubtedly serve the needs of consultants, architects, contractors, municipalities and manufacturers.

J. B. HARRIS, AMIEE, FIES
London

BLC Activities

THE COUNCIL's Office Lighting Exhibition at Brettenham House is to continue for the time being. About 2,000 visitors, mainly with professional interests, have visited it so far. The 'choose for yourself' lighting section remains popular; a rough break-

down of more than 400 tests shows that most people tend to select about 150 lm/ft² for filing, nearly 200 lm/ft² for clerical work and about 220 lm/ft² for typing. The Council is now preparing a book on office lighting, and Mr Jones is to speak on the subject at the ECA conference.

WITH THE PRIMARY AIM of providing illustrations and material for the autumn lighting numbers of women's and other consumer publications, an exhibition 'Lighting the small home' is being arranged from June 26 to late July. Main features will be a sitting-room, bedroom, kitchen and an old people's section, whilst the present 'choose for yourself' room will be refurnished in domestic style with sewing machine, hobbies outfit, food preparation as samples of typical visual tasks. Press shows are planned for June 22–23 and half-day conferences on June 26–27 for architects, builders and other housing interests, and also any *Light and Lighting* readers who are interested.

LIGHTING FOR WORK was the subject of a recent conference organised by the Council's NW Regional Office. There were two papers: 'Industrial lighting and human comfort', by J. S. Smyth; 'Lighting economics', by W. Robinson. After reviewing the general advantages of good lighting, Mr Smyth pointed out that poor lighting had a direct bearing on fatigue; since bad light required the task to be brought nearer the eyes, the eye muscles were subjected to greater stress and the body's posture was bad, giving rise to neck and backache. Glare caused additional fatigue resulting from the continual contraction of brows, eyelids and cheeks. He suggested that where users are experimentally permitted free choice of illumination level, the level chosen was higher than current practice by the order of ten times. The day of the illuminating engineer concerned solely with illumination level and indifferent to human needs was ending; as a factor of productivity, lighting is part of the science of ergonomics —the study of man in his working environment. Mr Robinson affirmed that the time was now more than ripe for factory lighting legislation to be revised; he felt there should be a minimum of 15 lm/ft² in all places where existing regulations specify a minimum of 6 lm/ft², with considerably higher levels matched to the more exacting visual tasks.

NEW ADDRESS for the BLC Glasgow Regional Office, serving the areas of the South of Scotland Electricity Board and the North of Scotland Hydro-Electric Board, is now 14 Woodlands Terrace, Glasgow C3. Tel: Douglas 4700.

British Standards

Table of colorimetric values of colours. Supplement No. 1 (1961) to B.S.2660, *Colours for building and decorative paints.* 3*s*.

This first supplement to B.S.2660, intended to be a permanent record of the standard colours, lists chromaticity values and luminance factors in terms of the CIE trichromatic system of colorimetry. The values were obtained from spectrophotometric measurements made at the Paint Research Station. Calculations have been made of chromaticity co-ordinates and luminance factor for each colour under CIE Standard Illuminants A, B and C. The supplement will be a useful aid to architects, lighting engineers and others needing to calculate the level of illumination in interiors.

B.S.1075:1961, *Studio spotlight lamps.* 5*s*.

The most important changes in this new edition are that the standard now covers lamps for television as well as film studios, and that its scope has been increased to deal with lamps for colour television and photography as well as black and white operation. Two rated voltages are recognised—115 and 240—and the schedule of standard wattages has been brought into line with current requirements, and now extends up to 10,000w. For lamps of this last rating a standard neck dimension is specified, which should eliminate difficulties studios have been experiencing in arranging adequate support.

B.S.3337:1961, *Dimensions of plug part and lampholder for capless photo-flash lamps.* 5*s*.

This new standard lays down the principal dimensions for the lampholders and plugs and details recommended gauges for checking the dimensions. It has been prepared in anticipation of a similar standard being adopted by the IEC.

B.S.2004:1961, *PVC-insulated cables and flexible cords for electric power and lighting.* 7*s*. 6*d*.

This is a revision in which the requirements for the thickness of the PVC insulation of these cables have been reduced; a similar revision has also been published of the sister standard dealing with PVC-insulated armoured power cables. Insulation thicknesses of both types of cable are now the same as those specified for polythene-insulated cables. At the same time, two new high-voltage ratings have been added.

British Standards noted above may be obtained from the British Standards Institution, 2 Park Street, London W1, at the prices stated; postage is charged extra to non-subscribers.

Situations

Vacant

The Revo Electric Co Ltd require a LIGHTING ENGINEER at their Head Office near Dudley. Applicants should have some experience in the design of interior and exterior lighting installations and will be required, when necessary, to visit clients and survey premises in any part of the country. Pensionable position with good prospects for advancement. Write in confidence giving details of experience and salary required to Sales Manager, Lighting Equipment, Revo Electric Co Ltd, Tipton, Staffs.

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Crompton Parkinson Ltd require a man experienced in the commercial and industrial applications of lighting engineering for sales in the London area. Proven sales initiative is essential and a technical qualification would be advantageous. This is a staff appointment with a contributory pension scheme. Apply to Ref. S3V, Crompton Parkinson Ltd, Crompton House, Aldwych, London WC2.

Philips Electrical Ltd require an ASSISTANT in their South-East Region Lighting Design Office, to assist in planning a wide variety of lighting schemes. Some knowledge of this work is necessary but the position will give the opportunity to gain further training and experience in this field. This post offers excellent prospects in an expanding department. Please send full details to the Personnel Officer (M/699/3), Century House, Shaftesbury Avenue, WC2.

Educational

Battersea College of Technology, London SW11. The Spectroscopy Section has organised a Summer School on COLOUR TECHNOLOGY (11) to be held on June 19–24. Fee 12 guineas, or 10 guineas if revision work (first day) is not required. Further details and enrolment forms available from the Secretary (Spectroscopy Courses).

Personal

With the retirement of Mr W. J. Jones, Mr E. J. Counter has been appointed Director of the Electric Lamp Industry Council and Mr A. Wilcock has become Director of the British Lighting Council. Mr Counter joined the staff of ELMA in 1946 and was appointed Secretary of ELIC in 1957 and Deputy Director in 1959. Mr Wilcock joined the Lighting Service Bureau in 1951 and was their Regional Engineer in the North West until becoming Assistant Director in November 1959.

Postscript

IT IS NOT VERY EASY these days to find time to read as widely as the job demands. To the layman, lighting is a very narrow field, yet to know all that is going on even in lighting requires a reading, or at least a perusal, of the medical, psychological, electrical, optical, and architectural literature, to say nothing of the trade press which gets thicker and glossier every year. I envy those who work in a university, because the senior common room has a bush telegraph built in which brings any important idea in one's subject to one's notice sooner or later. It was only by lucky chance that I first came across the work of Professor Etienne Grandjean, of Zurich. He is a physiologist, who publishes in journals which lighting engineers never see in the normal course of events, but much of his work has been concerned with the lighting and vision problems of the Swiss watchmaking industry. He has probably done more work on the requirements of really exacting visual tasks than anyone else. His work is unusual for a physiologist in that he realised very soon the need to link the design of the lighting system with the physiological needs of the worker. When I first met him, he was quite unaware of the British work on lighting and visual tasks, although he knew the Luckiesh school. One of his latest studies, published in *Industrielle Organisation* (Zurich), Vol. 8, 1959, describes a comparison of a number of different lighting systems used for the illumination of fine assembly on watches. He assessed both production, in terms of good jobs done, and fatigue, in terms of subjective flicker fusion frequency and of visual reaction times. The variations in the lighting system included the distribution and direction of the light, and also a comparison of filament and fluorescent lighting. All the systems were ones used or favoured in current practice in the watchmaking trade. He found small differences, one of his conclusions favouring phase-displaced fluorescent lighting. He also found evidence in favour of screening the light source from direct view. The effect on production was in every case more marked than the effect on fatigue, as measured by his objective methods. This is a very useful study, which reinforces many of the conclusions arrived at by other means by British workers. The evidence in favour of phase-displaced fluorescent lighting should please Collins and Hopkinson, whose paper on flicker and related subjects some years ago received a somewhat mixed reception, as far as I can recall. One might criticise his reliance on objective measures of fatigue, although he would no doubt support his thesis by some earlier work in which he found a quite remarkable correlation between flicker fusion frequency and subjective fatigue. If my memory serves me right, he was even able to distinguish between those who were able to relax completely over the lunch hour and return fresh to work, and those who, for various domestic reasons, were not. Another of his conclusions was that a higher work output resulted from the fluorescent lighting system than from the filament system which he tested, but he was careful not to generalise from this about the relative merits of the two types of light source.

WRITING IN THE SWEDISH LIGHTING JOURNAL 'LJUSKULTUR', Gustav Hassel of Stockholm analyses the merits and demerits of the Blackwell-Crouch and the Beuttell-Weston systems of illumination prescription. He is very careful not to make a choice between the two systems, but his impartial analysis is probably the best that has appeared so far. He points out the essential weakness of the Blackwell 'field factor' correction, which was, of course, one of the main reasons why the IES here felt safer to stick to the Weston experimental data, which we knew to be sound. Hassel makes it clear that current practice based on experience is showing that more light is wanted by workers and that as a result the Swedish lighting code will have to fall into line with the rest of us and step up its recommended levels. It will be interesting to see whether the Swedes adopt an entirely independent basis, as the Russians have done, or whether they follow one of the existing systems.

I ATTENDED THE CONFERENCE ON OFFICE LIGHTING arranged by the British Lighting Council, and was interested in the 'choose your own lighting level' demonstration which was fixed up in one of the offices there. One has to sit at a typing desk, and adjust a knob which varies the level of illumination on the desk. When a satisfactory level has been found, a record of the chosen level is made. Most people are choosing levels in the 150 lm/ft² region, quite a bit higher than those recommended even in the latest edition of the IES Code. Some of my readers will remember a similar but smaller demonstration at the old ELMA Lighting Service Bureau. People were then choosing levels of about 50 to 70 lm/ft² for reading small print, and at that time when the current recommended levels were of the order of 5 to 10 lm/ft² the ELMA experiment came in for plenty of criticism. Now that levels of the order of 50 lm/ft² are coming into use, the old ELMA choices are no longer out of this world as they once seemed to be. Perhaps the next twenty years may see a vindication of the more recent experiment. I do not mean to imply that this type of experiment does not have its faults. I think it is significant that the most commonly chosen value is almost always one just a little bit less than the maximum available, and that this seems to happen no matter (within reason) what this maximum chances to be. People turn the knob right up, and seem to feel that their choice should lie within the range provided, so they turn it down again. Only the most independent minded will say that there is not enough available to permit them to make a choice. This criticism implies, of course, that the chosen levels are more likely to be too low than too high. This may well be true, at least for the local lighting on the office worker's desk.

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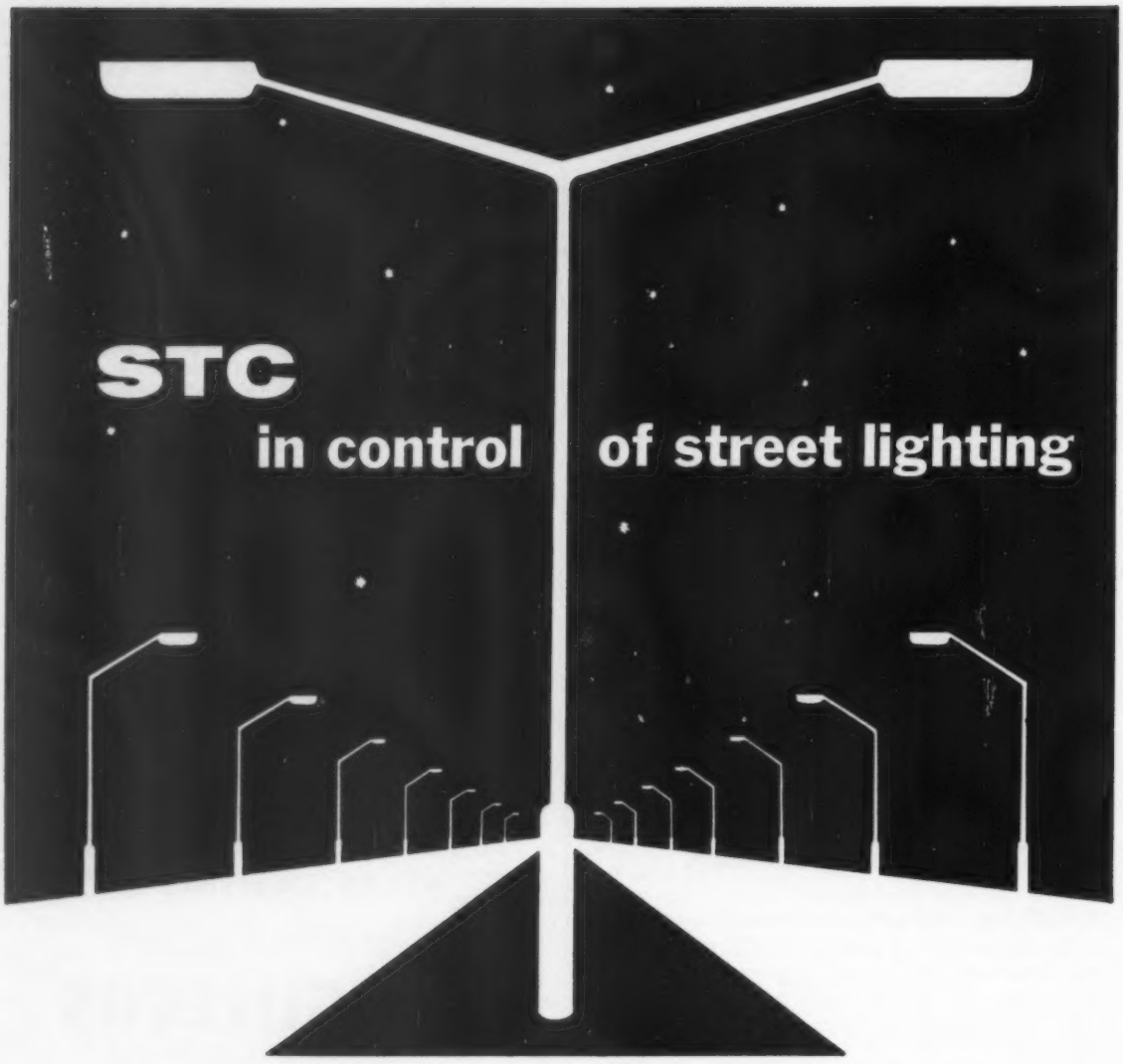

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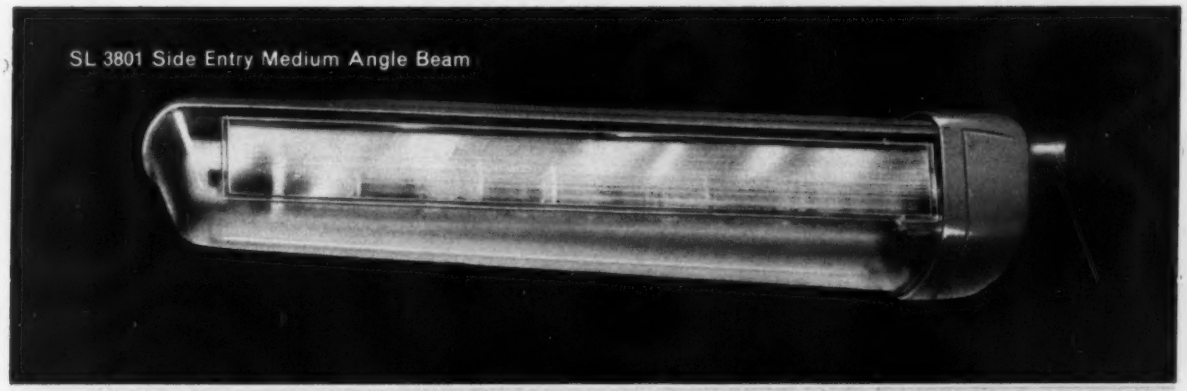
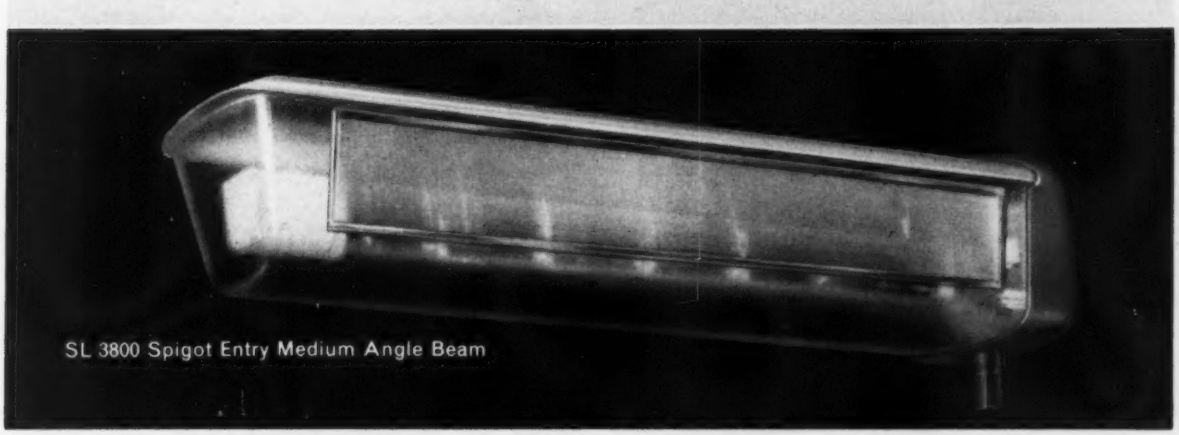


SL 3802 Side Entry Cut-Off



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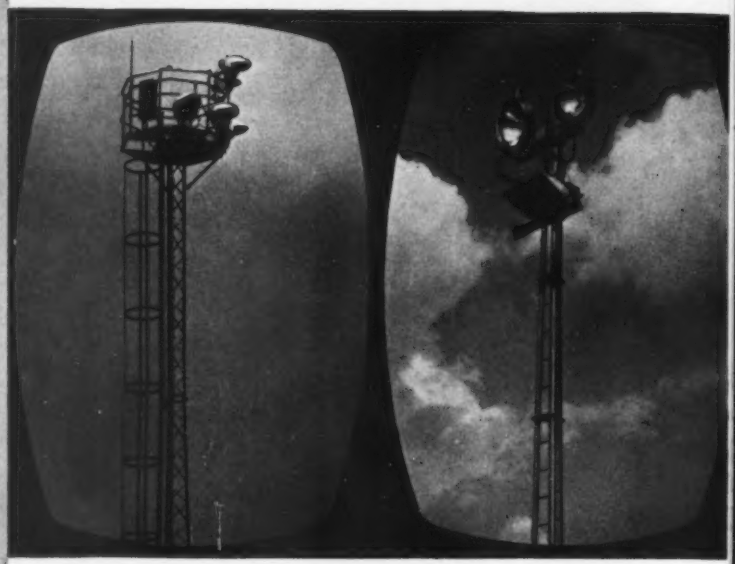
Floodlighting Tower, Chelsea Football Ground. This tower, one of six, is 107 ft. 6 in. high and mounts 54 floodlights.



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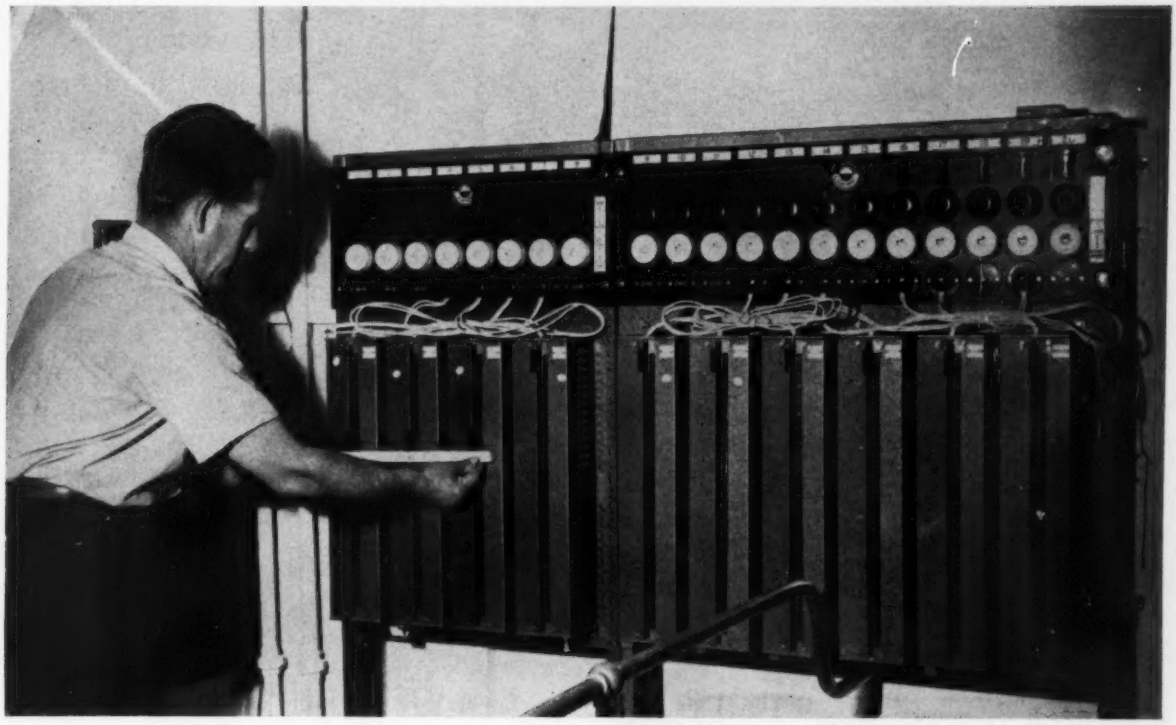

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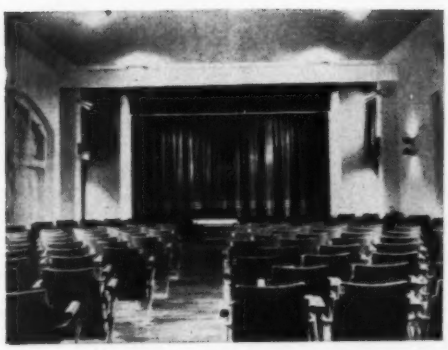

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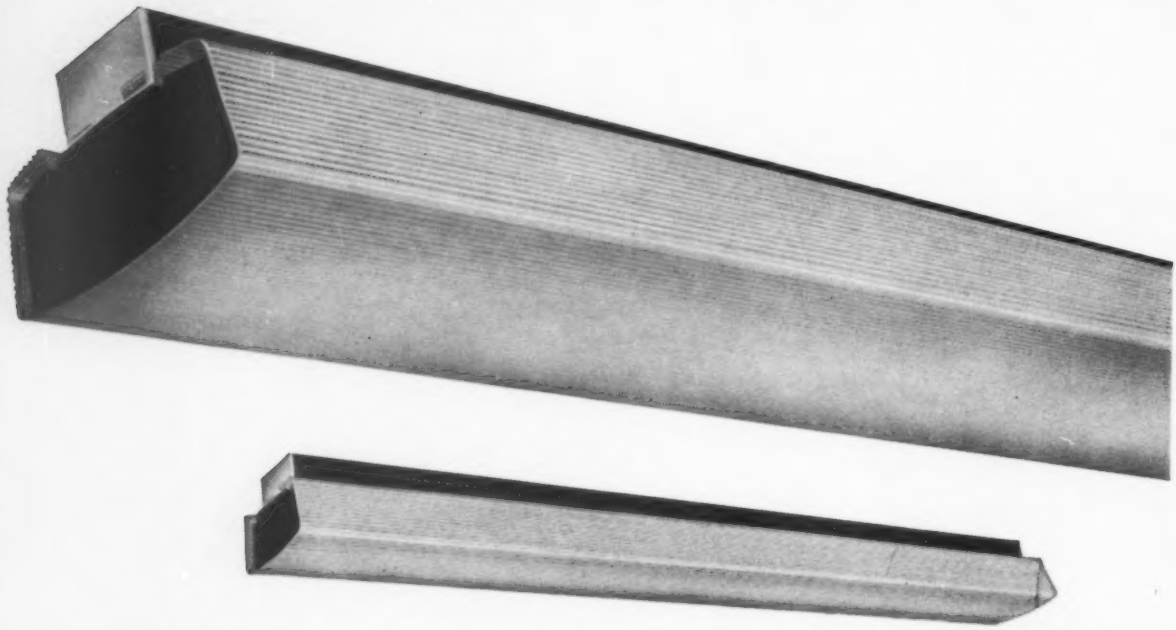

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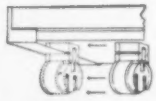

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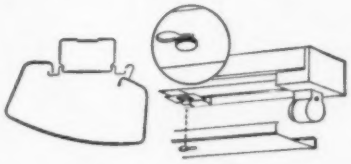

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